



SEQUENCE LISTING <110> Terman, David S <120>
COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC DISEASE <130>
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<151> 2000-05-30 <160> 166 <170> PatentIn version 3.1 <210> 1
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gaa aaa gat ttg cga aaa aag tct gaa tta caa aga aat gct tta agc 144
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 Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly
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tca aaa gat gct act aat aaa tat aaa ggg aaa aaa gta gac tta tat 336
 Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
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ggt gct tat tat gga tat caa tgt gct gga ggc aca cca aat aaa aca 384
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 35 40 45

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Lys Phe Phe Thr Asp Leu Ile Asn Phe Glu Asp Leu Leu Ile Asn Phe
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Asn Ser Lys Glu Met Ala Gln His Phe Lys Ser Lys Asn Val Asp Val
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 115 120 125

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 130 135 140

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Lys Glu Val Ser Leu Asp Lys Val Gln Thr Asp Lys Lys Asn Val Thr
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Val Gln Glu Leu Asp Ala Gln Ala Arg Arg Tyr Leu Gln Lys Asp Leu
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Lys Leu Tyr Asn Asn Asp Thr Leu Gly Gly Lys Ile Gln Arg Gly Lys

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Cys Thr Tyr Gly Gly Val Thr Pro His Glu Gly Asn Lys Leu Lys Glu	
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 180 185 190

Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe Asn Ser Ser Pro Tyr
 195 200 205

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Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe Asp Gln Ser Lys Tyr
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180 185 190

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Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe Asn Ser Ser Pro Tyr
195 200 205

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Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn Gly Asn Thr Phe Trp
210 215 220

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Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe Asp Gln Ser Lys Tyr
225 230 235 240

tta atg atg tac aac gac aat aaa acg gtt gat tct aaa agt gtg aag 885
Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp Ser Lys Ser Val Lys
245 250 255

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Ile Glu Val His Leu Thr Thr Lys Asn Gly
260 265

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Pro Thr Pro Asp Glu Leu His Lys Ala Ser Lys Phe Thr Gly Leu Met
35 40 45

Glu Asn Met Lys Val Leu Tyr Asp Asp His Tyr Val Ser Ala Thr Lys
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Val Lys Ser Val Asp Lys Phe Leu Ala His Asp Leu Ile Tyr Asn Ile
65 70 75 80

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Pro Lys Pro Asp Glu Leu His Lys Ser Ser Lys Phe Thr Gly Leu Met
35 40 45

Glu Asn Met Lys Val Leu Tyr Asp Asp Asn His Val Ser Ala Ile Asn
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Val Lys Ser Ile Asp Gln Phe Leu Tyr Phe Asp Leu Ile Tyr Ser Ile
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Lys Asp Thr Lys Leu Gly Asn Tyr Asp Asn Val Arg Val Glu Phe Lys
85 90 95

Asn Lys Asp Leu Ala Asp Lys Tyr Lys Asp Lys Tyr Val Asp Val Phe
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Gly Ala Asn Tyr Tyr Tyr Gln Cys Tyr Phe Ser Lys Lys Thr Asn Asp
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Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Glu Asn Ser Phe			
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Ala Gln Gly Gln Asn Ser Asn Thr Leu Leu Arg Ile Tyr Arg Asp Asn
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 Asp Pro Lys Pro Asp Glu Leu His Lys Ser Ser Lys Phe Thr Gly Leu
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Lys Glu Ser His Asp Gln Phe Leu Gln His Thr Ile Leu Phe Lys Gly
 65 70 75 80

Phe Phe Thr Asn His Ser Trp Tyr Asn Asp Leu Leu Val Asp Phe Asp
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Ser Lys Asp Ile Val Asp Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
 100 105 110

Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn Lys Thr
 115 120 125

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
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Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Leu Asp Gly Lys Gln Asn
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Thr Val Pro Leu Glu Thr Val Lys Thr Asn Lys Lys Asn Val Thr Val
 165 170 175

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 180 185 190

Leu Tyr Asn Ser Asp Val Phe Asp Gly Lys Val Gln Arg Gly Leu Ile
 195 200 205

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<210> 4 <211> 24 <212> DNA <213> Unknown <220> <223> Primer

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<210> 5 <211> 22 <212> DNA <213> Unknown <220> <223> Primer

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aatagagtaa aaatgaaatc tttttattat attatagaca agtataaaaa aggtatagta 120

atatatgtat gtataagtaa ataatgataa ttctataatt attgtatata actaataatt 180

acttcgacaa aaataatcta ttatccaaat attttagata ataaaaagtt tgtatggaat 240

tatgcttttag aggtgagcaa a atg aaa aaa aca gca ttt ata cta ctt tta 291
Met Lys Lys Thr Ala Phe Ile Leu Leu Leu
1 5 10

ttc att gcc cta acg tgg aca aca agt cca ctt gta aat ggt agc gag 339
Phe Ile Ala Leu Thr Trp Thr Thr Ser Pro Leu Val Asn Gly Ser Glu
15 20 25

aaa agc gaa gaa ata aat gaa aaa gat ttg cga aaa aag tct gaa ttg 387
Lys Ser Glu Glu Ile Asn Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu
30 35 40

cag gga gca gct tta ggc aat ctt aaa caa atc tat tat tac aat gaa 435
Gln Gly Ala Ala Leu Gly Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu
45 50 55

65				70				75				80			
Ser	Ile	Ser	Leu	Ile 85	Ile	Phe	Pro	Ser	Pro 90	Tyr	Tyr	Ser	Pro	Ala 95	Phe
Thr	Lys	Gly	Glu	Lys 100	Val	Asp	Leu	Asn 105	Thr	Lys	Arg	Thr	Lys 110	Lys	Ser
Gln	His	Thr 115	Ser	Glu	Gly	Thr	Tyr 120	Ile	His	Phe	Gln	Ile 125	Ser	Gly	Val
Thr	Asn 130	Thr	Glu	Lys	Leu	Pro 135	Thr	Pro	Ile	Glu	Leu 140	Pro	Leu	Lys	Val
Lys 145	Val	His	Gly	Lys	Asp 150	Ser	Pro	Leu	Lys	Tyr 155	Gly	Pro	Lys	Phe	Asp 160
Lys	Lys	Gln	Leu	Ala 165	Ile	Ser	Thr	Leu	Asp 170	Phe	Glu	Ile	Arg	His 175	Gln
Leu	Thr	Gln	Ile 180	His	Gly	Leu	Tyr	Arg 185	Ser	Ser	Asp	Lys	Thr 190	Gly	Gly
Tyr	Trp	Lys 195	Ile	Thr	Met	Asn	Asp 200	Gly	Ser	Thr	Tyr	Gln 205	Ser	Asp	Leu
Ser	Lys 210	Lys	Phe	Glu	Tyr	Asn 215	Thr	Glu	Lys	Pro	Pro 220	Ile	Asn	Ile	Asp
Glu 225	Ile	Lys	Thr	Ile	Glu	Ala	Glu	Ile	Asn						
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Met Glu Asn Asn Lys Glu Val Leu Lys Lys Met
1 5 10
gta ttt ttt gtt tta atg aaa ttt ctt gga cta aca atc ttg cca aaa 159
Val Phe Phe Val Leu Met Lys Phe Leu Gly Leu Thr Ile Leu Pro Lys
15 20 25
ggg att tgt tca aca aga ccc aag ccc agc caa tta caa aga tct aat 207
Gly Ile Cys Ser Thr Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn
30 35 40

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80	85	90	
agc cct gct ttt aca aaa ggg gaa aaa gtt gac tta aac aca aaa aga			339
Ser Pro Ala Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg			
95	100	105	
act aaa aaa agc caa cat act agc gaa gga act tat atc cat ttc caa			387
Thr Lys Lys Ser Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln			
110	115	120	
ata agt ggc gtt aca aat act gaa aaa tta cct act cca ata gaa cta			435
Ile Ser Gly Val Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu			
125	130	135	140
cct tta aaa gtt aag gtt cat ggt aaa gat agc ccc tta aag tat ggg			483
Pro Leu Lys Val Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly			
	145	150	155
cca aag ttc gat aaa aaa caa tta gct ata tca act tta gac ttt gaa			531
Pro Lys Phe Asp Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu			
	160	165	170
att cgt cat cag cta act caa ata cat gga tta tat cgt tca agc gat			579
Ile Arg His Gln Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp			
	175	180	185
aaa acg ggt ggt tat tgg aaa ata aca atg aat gac gga tcc aca tat			627
Lys Thr Gly Gly Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr			
190	195	200	
caa agt gat tta tct aaa aag ttt gaa tac aat act gaa aaa cca cct			675
Gln Ser Asp Leu Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro			
205	210	215	220
ata aat att gat gaa ata aaa act ata gaa gca gaa att aat taa			720
Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu Ala Glu Ile Asn			
	225	230	
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20 25 30

Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp Asn Ile Lys Asp
35 40 45

Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe Thr Asn Ser Glu
50 55 60

Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys Asn Thr Asp Gly

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
130 135 140

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Ile Asp Gly Lys Gln Thr
145 150 155 160

Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val
165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly
180 185 190

Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile
195 200 205

Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp
210 215 220

Ala Gln Gly Gln Tyr Pro Asp Thr Leu Leu Arg Ile Tyr Arg Asp Asn
225 230 235 240

Lys Thr Ile Asn Ser Glu Asn Leu
245

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Met Asn Lys Lys Leu Leu Met Asn Phe Phe Ile Val
1 5 10

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Ser Pro Leu Leu Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro
15 20 25

tta tca tct aat caa ata atc aaa act gca aaa gca tct aca aac gat 147
Leu Ser Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp
30 35 40

aat ata aag gat ttg cta gac tgg tat agt agt ggg tct gac act ttt 195
Asn Ile Lys Asp Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe
45 50 55 60

aca aat agt gaa gtt tta gat aat tcc tta gga tct atg cgt ata aaa 243
Thr Asn Ser Glu Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys
65 70 75

aac aca gat ggc agc atc agc ttg ata att ttt ccg agt cct tat tat 291
Asn Thr Asp Gly Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Ile Asp Gly Lys Gln Thr
 145 150 155 160
 aca gta cct ata gat aaa gtt aaa aca agc aaa aaa gaa gta act gtt 528
 Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val
 165 170 175
 caa gag cta gat ctt cag gca agg cat tat tta cac gga aaa ttt ggt 576
 Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly
 180 185 190
 tta tat aac tca gac agc ttt ggc ggt aag gtg caa aga ggc ttg att 624
 Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile
 195 200 205
 gtg ttt cat tct tct gaa ggg tcc acg gta agt tat gat ttg ttt gat 672
 Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp
 210 215 220
 gct caa ggg caa tat cca gat aca tta tta aga att tac aga gat aat 720
 Ala Gln Gly Gln Tyr Pro Asp Thr Leu Leu Arg Ile Tyr Arg Asp Asn
 225 230 235 240
 aaa act att aat tca gag aac ctc catattgatt tgtatttata cacaacttga 774
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Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu Gln Arg Asn Ala Leu Ser
 35 40 45

Asn Leu Arg Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Ile Thr Glu Asn
 50 55 60

Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly
 65 70 75 80

Phe Phe Thr Gly His Pro Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly
 85 90 95

Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
 100 105 110

Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn Lys Thr
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Met Lys Phe Leu Gly Leu Thr Ile Leu Pro Lys Gly Ile Cys Ser Thr
20 25 30

Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn Leu Val Lys Thr Phe
35 40 45

Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu Val Thr His Glu Asn
50 55 60

Val Lys Ser Val Asp Gln Leu Leu Ser His Asp Leu Ile Tyr Asn Val
65 70 75 80

Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu
85 90 95

Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly Val Glu
100 105 110

Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser Ala Cys
115 120 125

Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn His Leu Glu Ile Pro
130 135 140

Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
145 150 155 160

Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys Ser Arg Ile Ser Tyr
165 170 175

Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr Thr Asn Gly
180 185 190

Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Pro Lys Asn Lys
195 200 205

Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro Glu Phe Thr Gln Ser
210 215 220

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Leu Val Lys Thr Phe Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu	
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gtt act cac gag aat gtg aaa tct gtt gat caa ctt tta tca cac gat	303
Val Thr His Glu Asn Val Lys Ser Val Asp Gln Leu Leu Ser His Asp	
60 65 70 75	
tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa	351
Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu	
80 85 90	
ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat	399
Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp	
95 100 105	
att tat ggt gta gaa tat tac cat ctc tgt tat tta tgt gaa aat gca	447
Ile Tyr Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala	
110 115 120	
gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat	495
Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn	
125 130 135	
cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt	543
His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly	
140 145 150 155	
atc caa agc cta tca ttt gat att gaa caa ata aaa aat ggt aac tgc	591
Ile Gln Ser Leu Ser Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys	
160 165 170	
tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa	639
Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln	
175 180 185	
cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc	687
Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe	
190 195 200	
ata cct aag aat aaa gaa agt ttt tgg ttt gat ttt ttc cct gaa cca	735
Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro	
205 210 215	
gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg	783
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr	
220 225 230 235	
ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa	831
Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys	
240 245 250	
cttttgcttt tggcaacctt acctactgct ggatttagaa attttattgc aattctttta	891
ttaatgtaaa aacgctcatt tgatgagcgg ttttgtctta tctaaaggag ctttacctcc	951
taatgctgca aaattttaaa tgttggattt ttgtatttgt cattgtattt gatgggtaat	1011
cccatttttc gacagacatc	1031

Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn Thr
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Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys
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<400> 24
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caggctcgct tttgcgggcc ttttttatat ctgcgcgggg tctggtgctg attacttcag 180

ccaaaaggaa cacctgtat atg aag tgt ata tta ttt aaa tgg gta ctg tgc 232
Met Lys Cys Ile Leu Phe Lys Trp Val Leu Cys
1 5 10

ctg tta ctg ggt ttt tct tcg gta tcc tat tcc cgg gag ttt acg ata 280
Leu Leu Leu Gly Phe Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile

15										20					25					
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Asp	Phe	Ser	Thr	Gln	Gln	Ser	Tyr	Val	Ser	Ser	Leu	Asn	Ser	Ile	Arg					
		30					35					40								
aca	gag	ata	tcg	acc	cct	ctt	gaa	cat	ata	tct	cag	ggg	acc	aca	tcg	376				
Thr	Glu	Ile	Ser	Thr	Pro	Leu	Glu	His	Ile	Ser	Gln	Gly	Thr	Thr	Ser					
	45					50					55									
gtg	tct	gtt	att	aac	cac	acc	cca	ccg	ggc	agt	tat	ttt	gct	gtg	gat	424				
Val	Ser	Val	Ile	Asn	His	Thr	Pro	Pro	Gly	Ser	Tyr	Phe	Ala	Val	Asp					
60					65				70					75						
ata	cga	ggg	ctt	gat	gtc	tat	cag	gcg	cgt	ttt	gac	cat	ctt	cgt	ctg	472				
Ile	Arg	Gly	Leu	Asp	Val	Tyr	Gln	Ala	Arg	Phe	Asp	His	Leu	Arg	Leu					
				80					85					90						
att	att	gag	caa	aat	aat	tta	tat	gtg	gcc	ggg	ttc	gtt	aat	acg	gca	520				
Ile	Ile	Glu	Gln	Asn	Asn	Leu	Tyr	Val	Ala	Gly	Phe	Val	Asn	Thr	Ala					
			95					100					105							
aca	aat	act	ttc	tac	cgt	ttt	tca	gat	ttt	aca	cat	ata	tca	gtg	ccc	568				
Thr	Asn	Thr	Phe	Tyr	Arg	Phe	Ser	Asp	Phe	Thr	His	Ile	Ser	Val	Pro					
		110					115					120								
ggt	gtg	aca	acg	gtt	tcc	atg	aca	acg	gac	agc	agt	tat	acc	act	ctg	616				
Gly	Val	Thr	Thr	Val	Ser	Met	Thr	Thr	Asp	Ser	Ser	Tyr	Thr	Thr	Leu					
	125					130					135									
caa	cgt	gtc	gca	gcg	ctg	gaa	cgt	tcc	gga	atg	caa	atc	agt	cgt	cac	664				
Gln	Arg	Val	Ala	Ala	Leu	Glu	Arg	Ser	Gly	Met	Gln	Ile	Ser	Arg	His					
140					145				150					155						
tca	ctg	gtt	tca	tca	tat	ctg	gcg	tta	atg	gag	ttc	agt	ggt	aat	aca	712				
Ser	Leu	Val	Ser	Ser	Tyr	Leu	Ala	Leu	Met	Glu	Phe	Ser	Gly	Asn	Thr					
				160					165					170						
atg	acc	aga	gat	gca	tcc	aga	gca	gtt	ctg	cgt	ttt	gtc	act	gtc	aca	760				
Met	Thr	Arg	Asp	Ala	Ser	Arg	Ala	Val	Leu	Arg	Phe	Val	Thr	Val	Thr					
			175					180					185							
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Ala	Glu	Ala	Leu	Arg	Phe	Arg	Gln	Ile	Gln	Arg	Glu	Phe	Arg	Gln	Ala					
		190					195					200								
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Leu	Ser	Glu	Thr	Ala	Pro	Val	Tyr	Thr	Met	Thr	Pro	Gly	Asp	Val	Asp					
	205					210					215									
ctc	act	ctg	aac	tgg	ggg	cga	atc	agc	aat	gtg	ctt	ccg	gag	tat	cgg	904				
Leu	Thr	Leu	Asn	Trp	Gly	Arg	Ile	Ser	Asn	Val	Leu	Pro	Glu	Tyr	Arg					
220					225					230				235						
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Gly	Glu	Asp	Gly	Val	Arg	Val	Gly	Arg	Ile	Ser	Phe	Asn	Asn	Ile	Ser					
				240					245					250						
gcg	ata	ctg	ggg	act	gtg	gcc	gtt	ata	ctg	aat	tgc	cat	cat	cag	ggg	1000				
Ala	Ile	Leu	Gly	Thr	Val	Ala	Val	Ile	Leu	Asn	Cys	His	His	Gln	Gly					

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gcg cgt tct gtt cgc gcc gtg aat gaa gag agt caa cca gaa tgt cag			1048
Ala Arg Ser Val Arg Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln			
270	275	280	
ata act ggc gac agg cct gtt ata aaa ata aac aat aca tta tgg gaa			1096
Ile Thr Gly Asp Arg Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu			
285	290	295	
agt aat aca gct gca gcg ttt ctg aac aga aag tca cag ttt tta tat			1144
Ser Asn Thr Ala Ala Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr			
300	305	310	315
aca acg ggt aaa taa aggagttaag catgaagaag atgtttatgg cggtttttatt			1199
Thr Thr Gly Lys			
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caagtataat gaggatgaca catttacagt gaaggttgac gggaaagaat actggaccag			1319
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gttgacagtt gcctgtcaga ctgagcattt gttaaaaaaa tttcgcattg tgaatcccc			1559
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Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Glu Ile Ser Thr			
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Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn			
50	55	60	
His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp			
65	70	75	80
Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn			
85	90	95	
Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr			

100

105

110

Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro Gly Val Thr Thr Val
 115 120 125

Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala Ala
 130 135 140

Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser Ser
 145 150 155 160

Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala
 165 170 175

Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg
 180 185 190

Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala
 195 200 205

Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp Leu Thr Leu Asn Trp
 210 215 220

Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Asp Gly Val
 225 230 235 240

Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly Thr
 245 250 255

Val Ala Val Ile Leu Asn Cys His His Gln Gly Ala Arg Ser Val Arg
 260 265 270

Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln Ile Thr Gly Asp Arg
 275 280 285

Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu Ser Asn Thr Ala Ala
 290 295 300

Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr Thr Thr Gly Lys
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Tyr Gln Thr Ile
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gatattatatt atatgataat agttcatttt gtatttttgt tttttttgat attctcacct 180
gcttagttac aataaatcaa ttctatcgct gtatggtata gactgtttta ttatatattt 240
tgaatatttt taatctgccc agtctggttt tttaaaaaag tgctatcctc ttaatgtctt 300
tactaaatta gaaaacaagt ttcactttca actattgcat ctttaattaa tgggtcaagg 360
gatttcaaata gctcggtttgt ggccagttat acctcaaata actcaagttg ttgagcacag 420
ccaacgcaca tgcagtttga cgtatgacag gtatgcttta tttcatttaa att atg 476
Met
1

atg gtt ttc cag cca atc agt gag ttt ctc ttg ata agg aat gcg gga 524
Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala Gly
5 10 15

atg tct atg tat ttt aat aaa ata att tca ttt aat att att tca cga 572
Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser Arg
20 25 30

ata gtt att tgt atc ttt ttg ata tgt gga atg ttc atg gct ggg gct 620
Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly Ala
35 40 45

tca gaa aaa tat gat gct aac gca ccg caa cag gtc cag cct tat tct 668
Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr Ser
50 55 60 65

gtc tct tca tct gca ttt gaa aat ctc cat cct aat aat gaa atg gag 716
Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met Glu
70 75 80

agt tca atc aat ccc ttt tcc gca tcg gat aca gaa aga aat gct gca 764
Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala Ala
85 90 95

ata ata gat cgc gcc aat aag gag cag gag act gaa gcg gtg aat aag 812

Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn Lys	
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atg ata agc acc ggg gcc agg tta gct gca tca ggc agg gca tct gat	860
Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser Asp	
115 120 125	
gtt gct cac tca atg gtg ggc gat gcg gtt aat caa gaa atc aaa cag	908
Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys Gln	
130 135 140 145	
tgg tta aat cga ttc ggt acg gct caa gtt aat ctg aat ttt gac aaa	956
Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp Lys	
150 155 160	
aat ttt tcg cta aaa gaa agc tct ctt gat tgg ctg gct cct tgg tat	1004
Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp Tyr	
165 170 175	
gac tct gct tca ttc ctc ttt ttt agt cag tta ggt att cgc aat aaa	1052
Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn Lys	
180 185 190	
gac agc cgc aac aca ctt aac ctt ggc gtc ggg ata cgt aca ttg gag	1100
Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu Glu	
195 200 205	
aac ggt tgg ctg tac gga ctt aat act ttt tat gat aat gat ttg acc	1148
Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu Thr	
210 215 220 225	
ggc cac aac cac cgt atc ggt ctt ggt gcc gag gcc tgg acc gat tat	1196
Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp Tyr	
230 235 240	
tta cag ttg gct gcc aat ggg tat ttt cgc ctc aat gga tgg cac tcg	1244
Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His Ser	
245 250 255	
tcg cgt gat ttc tcc gac tat aaa gag cgc cca gcc act ggg ggg gat	1292
Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly Asp	
260 265 270	
ttg cgc gcg aat gct tat tta cct gca ctc cca caa ctg ggg ggg aag	1340
Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly Lys	
275 280 285	
ttg atg tat gag caa tac acc ggt gag cgt gtt gct tta ttt ggt aaa	1388
Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly Lys	
290 295 300 305	
gat aat ctg caa cgc aac cct tat gcc gtg act gcc ggg atc aat tac	1436
Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn Tyr	
310 315 320	
acc ccc gtg cct cta ctc act gtc ggg gta gat cag cgt atg ggg aaa	1484
Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly Lys	
325 330 335	
agc agt aag cat gaa aca cag tgg aac ctc caa atg aac tat cgc ctg	1532

Ser	Ser	Lys	His	Glu	Thr	Gln	Trp	Asn	Leu	Gln	Met	Asn	Tyr	Arg	Leu		
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Gly	Glu	Ser	Phe	Gln	Ser	Gln	Leu	Ser	Pro	Ser	Ala	Val	Ala	Gly	Thr		
	355					360					365						
cgt	cta	ctg	gcg	gag	agc	cgc	tat	aac	ctt	gtc	gat	cgt	aac	aat	aat	1628	
Arg	Leu	Leu	Ala	Glu	Ser	Arg	Tyr	Asn	Leu	Val	Asp	Arg	Asn	Asn	Asn		
370					375					380					385		
atc	gtg	ttg	gag	tat	cag	aaa	cag	cag	gtg	gtt	aaa	ctg	aca	tta	tcg	1676	
Ile	Val	Leu	Glu	Tyr	Gln	Lys	Gln	Gln	Val	Val	Lys	Leu	Thr	Leu	Ser		
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cca	gca	act	atc	tcc	ggc	ctg	ccg	ggc	cag	gtt	tat	cag	gtg	aac	gca	1724	
Pro	Ala	Thr	Ile	Ser	Gly	Leu	Pro	Gly	Gln	Val	Tyr	Gln	Val	Asn	Ala		
			405					410					415				
caa	gta	caa	ggg	gca	tct	gct	gta	agg	gaa	att	gtc	tgg	agt	gat	gcc	1772	
Gln	Val	Gln	Gly	Ala	Ser	Ala	Val	Arg	Glu	Ile	Val	Trp	Ser	Asp	Ala		
		420					425					430					
gaa	ctg	att	gcc	gct	ggc	ggc	aca	tta	aca	cca	ctg	agt	acc	aca	caa	1820	
Glu	Leu	Ile	Ala	Ala	Gly	Gly	Thr	Leu	Thr	Pro	Leu	Ser	Thr	Thr	Gln		
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Phe	Asn	Leu	Val	Leu	Pro	Pro	Tyr	Lys	Arg	Thr	Ala	Gln	Val	Ser	Arg		
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gta	acg	gac	gac	ctg	aca	gcc	aac	ttt	tat	tcg	ctt	agt	gcg	ctc	gcg	1916	
Val	Thr	Asp	Asp	Leu	Thr	Ala	Asn	Phe	Tyr	Ser	Leu	Ser	Ala	Leu	Ala		
				470					475					480			
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Val	Asp	His	Gln	Gly	Asn	Arg	Ser	Asn	Ser	Phe	Thr	Leu	Ser	Val	Thr		
			485					490					495				
gtt	cag	cag	cct	cag	ttg	aca	tta	acg	gcg	gcc	gtc	att	ggc	gat	ggc	2012	
Val	Gln	Gln	Pro	Gln	Leu	Thr	Leu	Thr	Ala	Ala	Val	Ile	Gly	Asp	Gly		
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gca	ccg	gct	aat	ggg	aaa	act	gca	atc	acc	gtt	gag	ttc	acc	gtt	gct	2060	
Ala	Pro	Ala	Asn	Gly	Lys	Thr	Ala	Ile	Thr	Val	Glu	Phe	Thr	Val	Ala		
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gat	ttt	gag	ggg	aaa	ccc	tta	gcc	ggg	cag	gag	gtg	gtg	ata	acc	acc	2108	
Asp	Phe	Glu	Gly	Lys	Pro	Leu	Ala	Gly	Gln	Glu	Val	Val	Ile	Thr	Thr		
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aat	aat	ggc	gcg	cta	ccg	aat	aaa	atc	acg	gaa	aag	aca	gat	gca	aat	2156	
Asn	Asn	Gly	Ala	Leu	Pro	Asn	Lys	Ile	Thr	Glu	Lys	Thr	Asp	Ala	Asn		
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ggc	gtc	gcg	cgc	att	gca	tta	acc	aat	acg	aca	gat	ggc	gtg	acg	gta	2204	
Gly	Val	Ala	Arg	Ile	Ala	Leu	Thr	Asn	Thr	Thr	Asp	Gly	Val	Thr	Val		
			565					570					575				
gtc	aca	gca	gaa	gtg	gag	ggg	caa	cgg	caa	agt	gtt	gat	acc	cac	ttt	2252	

Val	Thr	Ala	Glu	Val	Glu	Gly	Gln	Arg	Gln	Ser	Val	Asp	Thr	His	Phe	
		580					585					590				
gtt	aag	ggt	act	atc	gcg	gcg	gat	aaa	tcc	act	ctg	gct	gcg	gta	ccg	2300
Val	Lys	Gly	Thr	Ile	Ala	Ala	Asp	Lys	Ser	Thr	Leu	Ala	Ala	Val	Pro	
	595					600					605					
aca	tct	atc	atc	gct	gat	ggt	cta	atg	gct	tca	acc	atc	acg	ttg	gag	2348
Thr	Ser	Ile	Ile	Ala	Asp	Gly	Leu	Met	Ala	Ser	Thr	Ile	Thr	Leu	Glu	
610					615					620					625	
ttg	aag	gat	acc	tat	ggg	gac	ccg	cag	gct	ggc	gcg	aat	gtg	gct	ttt	2396
Leu	Lys	Asp	Thr	Tyr	Gly	Asp	Pro	Gln	Ala	Gly	Ala	Asn	Val	Ala	Phe	
				630					635					640		
gac	aca	acc	tta	ggc	aat	atg	ggc	gtt	atc	acg	gat	cac	aat	gac	ggc	2444
Asp	Thr	Thr	Leu	Gly	Asn	Met	Gly	Val	Ile	Thr	Asp	His	Asn	Asp	Gly	
			645					650					655			
act	tat	agc	gca	cca	ttg	acc	agt	acc	acg	ttg	ggg	gta	gca	aca	gta	2492
Thr	Tyr	Ser	Ala	Pro	Leu	Thr	Ser	Thr	Thr	Leu	Gly	Val	Ala	Thr	Val	
		660					665					670				
acg	gtg	aaa	gtg	gat	ggg	gct	gcg	ttc	agt	gtg	ccg	agt	gtg	acg	gtt	2540
Thr	Val	Lys	Val	Asp	Gly	Ala	Ala	Phe	Ser	Val	Pro	Ser	Val	Thr	Val	
	675					680					685					
aat	ttc	acg	gca	gat	cct	att	cca	gat	gct	ggc	cgc	tcc	agt	ttc	acc	2588
Asn	Phe	Thr	Ala	Asp	Pro	Ile	Pro	Asp	Ala	Gly	Arg	Ser	Ser	Phe	Thr	
690					695					700					705	
gtc	tcc	aca	ccg	gat	atc	ttg	gct	gat	ggc	acg	atg	agt	tcc	aca	tta	2636
Val	Ser	Thr	Pro	Asp	Ile	Leu	Ala	Asp	Gly	Thr	Met	Ser	Ser	Thr	Leu	
				710					715					720		
tcc	ttt	gtc	cct	gtc	gat	aag	aat	ggc	cat	ttt	atc	agt	ggg	atg	cag	2684
Ser	Phe	Val	Pro	Val	Asp	Lys	Asn	Gly	His	Phe	Ile	Ser	Gly	Met	Gln	
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Gly	Leu	Ser	Phe	Thr	Gln	Asn	Gly	Val	Pro	Val	Ser	Ile	Ser	Pro	Ile	
		740					745					750				
acc	gag	cag	cca	gat	agc	tat	acc	gcg	acg	gtg	gtt	ggg	aat	agt	gtc	2780
Thr	Glu	Gln	Pro	Asp	Ser	Tyr	Thr	Ala	Thr	Val	Val	Gly	Asn	Ser	Val	
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Gly	Asp	Val	Thr	Ile	Thr	Pro	Gln	Val	Asp	Thr	Leu	Ile	Leu	Ser	Thr	
770					775					780					785	
ttg	cag	aaa	aaa	ata	tcc	cta	ttc	ccg	gta	cct	acg	ctg	acc	ggt	att	2876
Leu	Gln	Lys	Lys	Ile	Ser	Leu	Phe	Pro	Val	Pro	Thr	Leu	Thr	Gly	Ile	
				790					795					800		
ctg	gtt	aac	ggg	caa	aat	ttc	gct	acg	gat	aaa	ggg	ttc	ccg	aaa	acg	2924
Leu	Val	Asn	Gly	Gln	Asn	Phe	Ala	Thr	Asp	Lys	Gly	Phe	Pro	Lys	Thr	
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Gly Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser
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Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly
35 40 45

Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr
50 55 60

Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met
65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala
85 90 95

Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn
100 105 110

Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser
115 120 125

Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys
130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp
145 150 155 160

Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp
165 170 175

Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn
180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu
195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu
210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp
 225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His
 245 250 255

Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly
 260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly
 275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly
 290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn
 305 310 315 320

Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly
 325 330 335

Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg
 340 345 350

Leu Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly
 355 360 365

Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn
 370 375 380

Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu
 385 390 395 400

Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn
 405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp
 420 425 430

Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr
 435 440 445

Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser
 450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu
465 470 475 480

Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val
485 490 495

Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp
500 505 510

Gly Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val
515 520 525

Ala Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr
530 535 540

Thr Asn Asn Gly Ala Leu Pro Asn Lys Ile Thr Glu Lys Thr Asp Ala
545 550 555 560

Asn Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr
565 570 575

Val Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His
580 585 590

Phe Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val
595 600 605

Pro Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu
610 615 620

Glu Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala
625 630 635 640

Phe Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp
645 650 655

Gly Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr
660 665 670

Val Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr
675 680 685

Val Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe
690 695 700

Thr Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr
705 710 715 720

Leu Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met
725 730 735

Gln Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro
740 745 750

Ile Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser
755 760 765

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe
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Glu Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr
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Leu Ala Phe Pro Leu Cys Ala Leu Ser Ile
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<400> 34

Leu Xaa Gly Gly Xaa Gly Asn Asp Xaa
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 ctgaccataa aggaaccaaa at atg aaa aaa gca ctt gcc aca ctg att gcc 172
 Met Lys Lys Ala Leu Ala Thr Leu Ile Ala
 1 5 10
 ctc gct ctc ccg gcc gcc gca ctg gcg gaa ggc gca tcc ggc ttt tac 220
 Leu Ala Leu Pro Ala Ala Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr
 15 20 25
 gtc caa gcc gat gcc gca cac gca aaa gcc tca agc tct tta ggt tct 268
 Val Gln Ala Asp Ala Ala His Ala Lys Ala Ser Ser Ser Leu Gly Ser
 30 35 40
 gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316
 Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp
 45 50 55
 ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364
 Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro
 60 65 70
 tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412

Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp
 75 80 85 90
 ttc gac acc caa tcg ccc gtc aaa ccg tat ctc ggc gcg cgc ttg agc 460
 Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser
 95 100 105
 ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa 508
 Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln
 110 115 120
 acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc 556
 Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr
 125 130 135
 ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc ggc aaa 604
 Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys
 140 145 150
 gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg 652
 Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val
 155 160 165 170
 cgc gtc aaa ttc tga tatgcgcctt attctgcaaa ccgccgagcc ttcggcgggtt 707
 Arg Val Lys Phe
 ttgttttctg ccaccgcaac tacacaagcc ggcgggttttg tacgataatc ccgaatgctg 767
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 aca 830

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Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala
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His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro
 35 40 45

Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp
 50 55 60

Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu
 65 70 75 80

Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro
 85 90 95

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val
 100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly
 115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp
 130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn
 145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe
 165 170

<210> 37 <211> 352 <212> PRT <213> Homo sapiens <400> 37

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 1 5 10 15

Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu
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Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile
 35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
 50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
 65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
 85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val
 100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
 115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
 130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val
 145 150 155 160

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Ala Val Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val

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Ser Ala Gly Glu Ala Val Val Asn Arg	Val Phe Asp Lys Leu Ser Pro			
35	40	45		
ctg cac gag cgc atc tac tgt gca ctc	tct ggt tca gct gct gat gcc			195
Leu His Glu Arg Ile Tyr Cys Ala Leu	Ser Gly Ser Ala Ala Asp Ala			
50	55	60		
caa gcc gtg gcc gac atg gcc gcc tac	cag ctg gag ctc cat ggg ata			243
Gln Ala Val Ala Asp Met Ala Ala Tyr	Gln Leu Glu Leu His Gly Ile			
65	70	75		
gaa ctg gag gaa cct cca ctt gtt ttg	gct gct gca aat gtg gtg aga			291
Glu Leu Glu Glu Pro Pro Leu Val Leu	Ala Ala Asn Val Val Arg			
80	85	90		
aat atc agc tat aaa tat cga gag gac	ttg tct gca cat ctc atg gta			339
Asn Ile Ser Tyr Lys Tyr Arg Glu Asp	Leu Ser Ala His Leu Met Val			
95	100	105	110	
gct ggc tgg gac caa cgt gaa gga ggt	cag gta tat gga acc ctg gga			387
Ala Gly Trp Asp Gln Arg Glu Gly Gly	Gln Val Tyr Gly Thr Leu Gly			
115	120	125		
gga atg ctg act cga cag cct ttt gcc	att ggt ggc tcc ggc agc acc			435
Gly Met Leu Thr Arg Gln Pro Phe Ala	Ile Gly Gly Ser Gly Ser Thr			
130	135	140		
ttt atc tat ggt tat gtg gat gca gca	tat aag cca ggc atg tct ccc			483
Phe Ile Tyr Gly Tyr Val Asp Ala Ala	Tyr Lys Pro Gly Met Ser Pro			
145	150	155		
gag gag tgc agg cgc ttc acc aca gac	gct att gct ctg gcc atg agc			531
Glu Glu Cys Arg Arg Phe Thr Asp Ala	Ile Ala Leu Ala Met Ser			
160	165	170		
cgg gat ggc tca agc ggg ggt gtc atc	tac ctg gtc act att aca gct			579
Arg Asp Gly Ser Ser Gly Gly Val Ile	Tyr Leu Val Thr Ile Thr Ala			
175	180	185	190	
gcc ggt gtg gac cat cga gtc atc ttg	ggc aat gaa ctg cca aaa ttc			627
Ala Gly Val Asp His Arg Val Ile Leu	Gly Asn Glu Leu Pro Lys Phe			
195	200	205		
tat gat gag tga accttc				645
Tyr Asp Glu				

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Glu	Phe	Asp	Gly	Gly	Val	Val	Met	Gly	Ser	Asp	Ser	Arg	Val	Ser	Ala
			20					25					30		

gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac 96
Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Ala Asp
20 25 30

tgg	gtg	ctg	ctc	cgg	acc	gcg	ctg	ccc	cgc	ata	ttc	tcc	ctg	ctg	gtg	144
Trp	Val	Leu	Leu	Arg	Thr	Ala	Leu	Pro	Arg	Ile	Phe	Ser	Leu	Leu	Val	
		35					40					45				
ccc	acc	gcg	ctg	cca	ctg	ctc	cgg	gtc	tgg	gcg	gtg	ggc	ctg	agc	cgc	192
Pro	Thr	Ala	Leu	Pro	Leu	Leu	Arg	Val	Trp	Ala	Val	Gly	Leu	Ser	Arg	
	50					55					60					
tgg	gcc	gtg	ctc	tgg	ctg	ggg	gcc	tgc	ggg	gtc	ctc	agg	gca	acg	gtt	240
Trp	Ala	Val	Leu	Trp	Leu	Gly	Ala	Cys	Gly	Val	Leu	Arg	Ala	Thr	Val	
65					70					75					80	
ggc	tcc	aag	agc	gaa	aac	gca	ggt	gcc	cag	ggc	tgg	ctg	gct	gct	ttg	288
Gly	Ser	Lys	Ser	Glu	Asn	Ala	Gly	Ala	Gln	Gly	Trp	Leu	Ala	Ala	Leu	
				85					90					95		
aag	cca	tta	gct	gcg	gca	ctg	ggc	ttg	gcc	ctg	ccg	gga	ctt	gcc	ttg	336
Lys	Pro	Leu	Ala	Ala	Ala	Leu	Gly	Leu	Ala	Leu	Pro	Gly	Leu	Ala	Leu	
			100					105					110			
ttc	cga	gag	ctg	atc	tca	tgg	gga	gcc	ccc	ggg	tcc	gcg	gat	agc	acc	384
Phe	Arg	Glu	Leu	Ile	Ser	Trp	Gly	Ala	Pro	Gly	Ser	Ala	Asp	Ser	Thr	
		115					120					125				
agg	cta	ctg	cac	tgg	gga	agt	cac	cct	acc	gcc	ttc	gtt	gtc	agt	tat	432
Arg	Leu	Leu	His	Trp	Gly	Ser	His	Pro	Thr	Ala	Phe	Val	Val	Ser	Tyr	
	130					135					140					
gca	gcg	gca	ctg	ccc	gca	gca	gcc	ctg	tgg	cac	aaa	ctc	ggg	agc	ctc	480
Ala	Ala	Ala	Leu	Pro	Ala	Ala	Ala	Leu	Trp	His	Lys	Leu	Gly	Ser	Leu	
145					150					155					160	
tgg	gtg	ccc	ggc	ggt	cag	ggc	ggc	tct	gga	aac	cct	gtg	cgt	cgg	ctt	528
Trp	Val	Pro	Gly	Gly	Gln	Gly	Gly	Ser	Gly	Asn	Pro	Val	Arg	Arg	Leu	
				165					170					175		
cta	ggc	tgc	ctg	ggc	tgc	gag	acg	cgc	cgc	ctc	tgc	ctg	ttc	ctg	gtc	576
Leu	Gly	Cys	Leu	Gly	Ser	Glu	Thr	Arg	Arg	Leu	Ser	Leu	Phe	Leu	Val	
			180					185					190			
ctg	gtg	gtc	ctc	tcc	tct	ctt	ggg	gag	atg	gcc	att	cca	ttc	ttt	acg	624
Leu	Val	Val	Leu	Ser	Ser	Leu	Gly	Glu	Met	Ala	Ile	Pro	Phe	Phe	Thr	
		195					200					205				
ggc	cgc	ctc	act	gac	tgg	att	cta	caa	gat	ggc	tca	gcc	gat	acc	ttc	672
Gly	Arg	Leu	Thr	Asp	Trp	Ile	Leu	Gln	Asp	Gly	Ser	Ala	Asp	Thr	Phe	
	210					215					220					
act	cga	aac	tta	act	ctc	atg	tcc	att	ctc	acc	ata	gcc	agt	gca	gtg	720
Thr	Arg	Asn	Leu	Thr	Leu	Met	Ser	Ile	Leu	Thr	Ile	Ala	Ser	Ala	Val	
225					230					235					240	
ctg	gag	ttc	gtg	ggt	gac	ggg	atc	tat	aac	aac	acc	atg	ggc	cac	gtg	768
Leu	Glu	Phe	Val	Gly	Asp	Gly	Ile	Tyr	Asn	Asn	Thr	Met	Gly	His	Val	
				245					250					255		
cac	agc	cac	ttg	cag	gga	gag	gtg	ttt	ggg	gct	gtc	ctg	cgc	cag	gag	816
His	Ser	His	Leu	Gln	Gly	Glu	Val	Phe	Gly	Ala	Val	Leu	Arg	Gln	Glu	
			260					265					270			

acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta	864
Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val	
275 280 285	
aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc	912
Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser	
290 295 300	
tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg	960
Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met	
305 310 315 320	
ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct	1008
Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro	
325 330 335	
ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg	1056
Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu	
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gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att	1104
Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile	
355 360 365	
gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag	1152
Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu	
370 375 380	
ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc	1200
Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu	
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aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt	1248
Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser	
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Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln	
420 425 430	
ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt	1344
Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val	
435 440 445	
ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc	1392
Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile	
450 455 460	
tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag	1440
Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu	
465 470 475 480	
tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc	1488
Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro	
485 490 495	
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Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr	
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Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu	
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Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys	
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agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga	1680
Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly	
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cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac	1728
Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr	
565 570 575	
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Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly	
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Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr	
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Met Glu Glu Ile Thr Ala Ala Val Lys Ser Gly Ala His Ser Phe	
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Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly	
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Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala	
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Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala	
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Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser	
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Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile	
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 Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg
 50 55 60
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 65 70 75 80
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 100 105 110
 Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr
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 Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr
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 Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu
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 Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu
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 180 185 190
 Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr
 195 200 205
 Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe
 210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val
 225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val
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Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln
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465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro
485 490 495

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Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu
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Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly
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Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr
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Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly
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660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile
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Met Ser Lys Gly Pro Ala Val Gly Ile Asp Leu Gly Thr Thr Tyr
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Ser Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn
20 25 30
gat cag gga aac cga acc act cca agc tat gtc gcc ttt acg gac act 205
Asp Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr
35 40 45
gaa cgg ttg atc ggt gat gcc gca aag aat caa gtt gca atg aac ccc 253
Glu Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro
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acc aac aca gtt ttt gat gcc aaa cgt ctg att gga cgc aga ttt gat 301
Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp
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gat gct gtt gtc cag tct gat atg aaa cat tgg ccc ttt atg gtg gtg 349
Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val
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aat gat gct ggc agg ccc aag gtc caa gta gaa tac aag gga gag acc 397
Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr
100 105 110
aaa agc ttc tat cca gag gag gtg tct tct atg gtt ctg aca aag atg 445
Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met
115 120 125
aag gaa att gca gaa gcc tac ctt ggg aag act gtt acc aat gct gtg 493
Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val
130 135 140
gtc aca gtg cca gct tac ttt aat gac tct cag cgt cag gct acc aaa 541
Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys
145 150 155
gat gct gga act att gct ggt ctc aat gta ctt aga att att aat gag 589
Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu

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cca act gct gct gct att gct tac ggc tta gac aaa aag gtt gga gca				637
Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala	180	185	190	
gaa aga aac gtg ctc atc ttt gac ctg gga ggt ggc act ttt gat gtg				685
Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val	195	200	205	
tca atc ctc act att gag gat gga atc ttt gag gtc aag tct aca gct				733
Ser Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala	210	215	220	
gga gac acc cac ttg ggt gga gaa gat ttt gac aac cga atg gtc aac				781
Gly Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn	225	230	235	
cat ttt att gct gag ttt aag cgc aag cat aag aag gac atc agt gag				829
His Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu	240	245	250	255
aac aag aga gct gta aga cgc ctc cgt act gct tgt gaa cgt gct aag				877
Asn Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys	260	265	270	
cgt acc ctc tct tcc agc acc cag gcc agt att gag atc gat tct ctc				925
Arg Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu	275	280	285	
tat gaa gga atc gac ttc tat acc tcc att acc cgt gcc cga ttt gaa				973
Tyr Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu	290	295	300	
gaa ctg aat gct gac ctg ttc cgt ggc acc ctg gac cca gta gag aaa				1021
Glu Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys	305	310	315	
gcc ctt cga gat gcc aaa cta gac aag tca cag att cat gat att gtc				1069
Ala Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val	320	325	330	335
ctg gtt ggt ggt tct act cgt atc ccc aag att cag aag ctt ctc caa				1117
Leu Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln	340	345	350	
gac ttc ttc aat gga aaa gaa ctg aat aag agc atc aac cct gat gaa				1165
Asp Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu	355	360	365	
gct gtt gct tat ggt gca gct gtc cag gca gcc atc ttg tct gga gac				1213
Ala Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp	370	375	380	
aag tct gag aat gtt caa gat ttg ctg ctc ttg gat gtc act cct ctt				1261
Lys Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu	385	390	395	
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Ser Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys				

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cgt aat acc acc att cct acc aag cag aca cag acc ttc act acc tat				1357
Arg Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr	420	425	430	
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Ser Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg	435	440	445	
gcc atg aca aag gat aac aac ctg ctt ggc aag ttt gaa ctc aca ggc				1453
Ala Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly	450	455	460	
ata cct cct gca ccc cga ggt gtt cct cag att gaa gtc act ttt gac				1501
Ile Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp	465	470	475	
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Ile Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr	480	485	490	495
gga aaa gag aac aag att act atc act aat gac aag ggc cgt ttg agc				1597
Gly Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser	500	505	510	
aag gaa gac att gaa cgt atg gtc cag gaa gct gag aag tac aaa gct				1645
Lys Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala	515	520	525	
gaa gat gag aag cag agg gac aag gtg tca tcc aag aat tca ctt gag				1693
Glu Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu	530	535	540	
tcc tat gcc ttc aac atg aaa gca act gtt gaa gat gag aaa ctt caa				1741
Ser Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln	545	550	555	
ggc aag att aac gat gag gac aaa cag aag att ctg gac aag tgt aat				1789
Gly Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn	560	565	570	575
gaa att atc aac tgg ctt gat aag aat cag act gct gag aag gaa gaa				1837
Glu Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu	580	585	590	
ttt gaa cat caa cag aaa gag ctg gag aaa gtt tgc aac ccc atc atc				1885
Phe Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile	595	600	605	
acc aag ctg tac cag agt gca gga ggc atg cca gga gga atg cct ggg				1933
Thr Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly	610	615	620	
gga ttt cct ggt ggt gga gct cct ccc tct ggt ggt gct tcc tca ggg				1981
Gly Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly	625	630	635	
ccc acc att gaa gag gtt gat taa gccaaccaag ttagatgta gcattgttcc				2035
Pro Thr Ile Glu Glu Val Asp				

640

645

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2085

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35 40 45Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr
50 55 60Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp
65 70 75 80Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn
85 90 95Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr Lys
100 105 110Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met Lys
115 120 125Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val Val
130 135 140Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp
145 150 155 160Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro
165 170 175Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu
180 185 190Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser
195 200 205

Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly

210

215

220

Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His
 225 230 235 240

Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn
 245 250 255

Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg
 260 265 270

Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr
 275 280 285

Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu
 290 295 300

Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala
 305 310 315 320

Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu
 325 330 335

Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp
 340 345 350

Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala
 355 360 365

Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys
 370 375 380

Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu Ser
 385 390 395 400

Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg
 405 410 415

Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser
 420 425 430

Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala
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Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile

450 455 460
 Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile
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 Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr Gly
 485 490 495
 Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys
 500 505 510
 Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu
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 Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser
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 Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly
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 Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn Glu
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 Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu Phe
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 Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr
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 Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly
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	Met	Asn	Lys	Asn	Val	Leu	Lys	Phe	
	1				5				
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Met Val Phe Ile Met Leu Leu Asn Ile Ile Thr Pro Leu Phe Asn Lys									
10 15 20									
aat gaa gca ttt gca gca cga gat att tca tca acg aat gtt aca gat	270								
Asn Glu Ala Phe Ala Ala Arg Asp Ile Ser Ser Thr Asn Val Thr Asp									
25 30 35 40									
tta act gta tca ccg tct aag ata gaa gat ggt ggt aaa acg aca gta	318								
Leu Thr Val Ser Pro Ser Lys Ile Glu Asp Gly Gly Lys Thr Thr Val									
45 50 55									
aaa atg acg ttc gac gat aaa aat gga aaa ata caa aat ggt gac atg	366								
Lys Met Thr Phe Asp Asp Lys Asn Gly Lys Ile Gln Asn Gly Asp Met									
60 65 70									
att aaa gtg gca tgg ccg aca agc ggt aca gta aag ata gag ggt tat	414								
Ile Lys Val Ala Trp Pro Thr Ser Gly Thr Val Lys Ile Glu Gly Tyr									
75 80 85									
agt aaa aca gta cca tta act gtt aaa ggt gaa cag gtg ggt caa gca	462								
Ser Lys Thr Val Pro Leu Thr Val Lys Gly Glu Gln Val Gly Gln Ala									
90 95 100									
gtt att aca cca gac ggt gca aca att aca ttc aat gat aaa gta gaa	510								
Val Ile Thr Pro Asp Gly Ala Thr Ile Thr Phe Asn Asp Lys Val Glu									
105 110 115 120									
aaa tta agt gat gtt tcg gga ttt gca gaa ttt gaa gta caa gga aga	558								
Lys Leu Ser Asp Val Ser Gly Phe Ala Glu Phe Glu Val Gln Gly Arg									
125 130 135									
aat tta acg caa aca aat act tca gat gac aaa gta gct acg ata aca	606								
Asn Leu Thr Gln Thr Asn Thr Ser Asp Asp Lys Val Ala Thr Ile Thr									
140 145 150									
tct ggg aat aaa tca acg aat gtt acg gtt cat aaa agt gaa gcg gga	654								
Ser Gly Asn Lys Ser Thr Asn Val Thr Val His Lys Ser Glu Ala Gly									
155 160 165									
aca agt agt gtt ttc tat tat aaa acg gga gat atg cta cca gaa gat	702								
Thr Ser Ser Val Phe Tyr Tyr Lys Thr Gly Asp Met Leu Pro Glu Asp									
170 175 180									
acg aca cat gta cga tgg ttt tta aat att aac aat gaa aaa agt tat	750								
Thr Thr His Val Arg Trp Phe Leu Asn Ile Asn Asn Glu Lys Ser Tyr									
185 190 195 200									
gta tcg aaa gat att act ata aag gat cag att caa ggt gga cag cag	798								
Val Ser Lys Asp Ile Thr Ile Lys Asp Gln Ile Gln Gly Gly Gln Gln									
205 210 215									
tta gat tta agc aca tta aac att aat gtg aca ggt aca cat agc aat	846								
Leu Asp Leu Ser Thr Leu Asn Ile Asn Val Thr Gly Thr His Ser Asn									
220 225 230									
tat tat agt gga caa agt gca att act gat ttt gaa aaa gcc ttt cca	894								

Tyr	Tyr	Ser	Gly	Gln	Ser	Ala	Ile	Thr	Asp	Phe	Glu	Lys	Ala	Phe	Pro		
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ggt	tct	aaa	ata	act	gtt	gat	aat	acg	aag	aac	aca	att	gat	gta	aca	942	
Gly	Ser	Lys	Ile	Thr	Val	Asp	Asn	Thr	Lys	Asn	Thr	Ile	Asp	Val	Thr		
		250				255					260						
att	cca	caa	ggc	tat	ggg	tca	tat	aat	agt	ttt	tca	att	aac	tac	aaa	990	
Ile	Pro	Gln	Gly	Tyr	Gly	Ser	Tyr	Asn	Ser	Phe	Ser	Ile	Asn	Tyr	Lys		
265					270					275					280		
acc	aaa	att	acg	aat	gaa	cag	caa	aaa	gag	ttt	gtt	aat	aat	tca	caa	1038	
Thr	Lys	Ile	Thr	Asn	Glu	Gln	Gln	Lys	Glu	Phe	Val	Asn	Asn	Ser	Gln		
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gct	tgg	tat	caa	gag	cat	ggg	aag	gaa	gaa	gtg	aac	ggg	aaa	tca	ttt	1086	
Ala	Trp	Tyr	Gln	Glu	His	Gly	Lys	Glu	Glu	Val	Asn	Gly	Lys	Ser	Phe		
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Asn	His	Thr	Val	His	Asn	Ile	Asn	Ala	Asn	Ala	Gly	Ile	Glu	Gly	Thr		
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gta	aaa	ggg	gaa	tta	aaa	gtt	tta	aaa	cag	gat	aaa	gat	acc	aag	gct	1182	
Val	Lys	Gly	Glu	Leu	Lys	Val	Leu	Lys	Gln	Asp	Lys	Asp	Thr	Lys	Ala		
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cct	ata	gct	aat	gta	aaa	ttt	aaa	ctt	tct	aaa	aaa	gat	gga	tca	gtt	1230	
Pro	Ile	Ala	Asn	Val	Lys	Phe	Lys	Leu	Ser	Lys	Lys	Asp	Gly	Ser	Val		
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Val	Lys	Asp	Asn	Gln	Lys	Glu	Ile	Glu	Ile	Ile	Thr	Asp	Ala	Asn	Gly		
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Ile	Ala	Asn	Ile	Lys	Ala	Leu	Pro	Ser	Gly	Asp	Tyr	Ile	Leu	Lys	Glu		
			380					385					390				
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Ile	Glu	Ala	Pro	Arg	Pro	Tyr	Thr	Phe	Asp	Lys	Asp	Lys	Glu	Tyr	Pro		
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Phe	Thr	Met	Lys	Asp	Thr	Asp	Asn	Gln	Gly	Tyr	Phe	Thr	Thr	Ile	Glu		
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tgg	gaa	ggc	act	caa	aaa	gtg	aaa	cca	acg	att	tat	ttc	aag	ttg	tac	1518	
Trp	Glu	Gly	Thr	Gln	Lys	Val	Lys	Pro	Thr	Ile	Tyr	Phe	Lys	Leu	Tyr		
				445					450					455			
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Lys	Gln	Asp	Asp	Asn	Gln	Asn	Thr	Thr	Pro	Val	Asp	Lys	Ala	Glu	Ile		
			460					465					470				
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Lys	Lys	Leu	Glu	Asp	Gly	Thr	Thr	Lys	Val	Thr	Trp	Ser	Asn	Leu	Pro		
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Glu	Asn	Asp	Lys	Asn	Gly	Lys	Ala	Ile	Lys	Tyr	Leu	Val	Lys	Glu	Val		
	490					495					500						
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Asn	Ala	Gln	Gly	Glu	Asp	Thr	Thr	Pro	Glu	Gly	Tyr	Thr	Lys	Lys	Glu		
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Arg	Pro	Glu	Lys	Val	Ser	Val	Asn	Leu	Leu	Ala	Asn	Gly	Glu	Lys	Val		
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Lys	Thr	Leu	Asp	Val	Thr	Ser	Glu	Thr	Asn	Trp	Lys	Tyr	Glu	Phe	Lys		
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gac	tta	ccg	aag	tat	gat	gaa	gga	aag	aaa	ata	gaa	tat	aca	gtg	acc	1950	
Asp	Leu	Pro	Lys	Tyr	Asp	Glu	Gly	Lys	Lys	Ile	Glu	Tyr	Thr	Val	Thr		
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gaa	gat	cac	gta	aaa	gac	tac	aca	aca	gac	atc	aac	ggg	acg	aca	ata	1998	
Glu	Asp	His	Val	Lys	Asp	Tyr	Thr	Thr	Asp	Ile	Asn	Gly	Thr	Thr	Ile		
				605					610					615			
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Trp	Asp	Asp	Asn	Asn	Asn	Gln	Asp	Gly	Lys	Arg	Pro	Thr	Glu	Ile	Lys		
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gtt	gag	tta	tat	caa	gat	gga	aaa	gca	aca	gga	aaa	acg	gca	ata	tta	2142	
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Asn	Glu	Ser	Asn	Asn	Trp	Thr	His	Thr	Trp	Thr	Gly	Leu	Asp	Glu	Lys		
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Ala	Lys	Gly	Gln	Gln	Val	Lys	Tyr	Thr	Val	Glu	Glu	Leu	Thr	Lys	Val		
				685					690					695			
aaa	ggg	tat	aca	aca	cat	gtg	gat	aac	aat	gat	atg	ggg	aac	ttg	att	2286	
Lys	Gly	Tyr	Thr	Thr	His	Val	Asp	Asn	Asn	Asp	Met	Gly	Asn	Leu	Ile		
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gtg	acg	aat	aaa	tat	acg	cca	gaa	aca	aca	tca	att	agt	ggg	gaa	aaa	2334	

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Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val	
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agt gtg aat tta ttg gct gat gga gag aaa gta aaa acg tta gac gtg	2430
Ser Val Asn Leu Leu Ala Asp Gly Glu Lys Val Lys Thr Leu Asp Val	
745 750 755 760	
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Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr	
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780 785 790	
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Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln	
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Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr	
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His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr	
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Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu	
925 930 935	
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Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn	
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Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys	
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Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp	
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Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr	
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His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys	
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Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro	
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Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp	
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Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu	
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Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp	
1155 1160 1165	
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Phe Asn Ser

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85 90 95Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr
100 105 110Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe
115 120 125Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser
130 135 140Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val
145 150 155 160Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys
165 170 175Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu
180 185 190Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys
195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile
210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile
225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn
245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr
260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln
275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys
290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn
305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu
325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys
340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile
355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro
370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr
385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn
405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr
420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys
435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr
 450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr
 465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala
 485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr
 500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr
 515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp
 530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn
 545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu
 565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly
 580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr
 595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu
 610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp
 625 630 635 640

Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys
 645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His
 660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr
 675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp
690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu
705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln
725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly
740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr
755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr
770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly
785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val
805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr
820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr
835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu
850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro
915 920 925

Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr
 930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu
 945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp
 965 970 975

His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn
 980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp
 995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val
 1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu
 1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu
 1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr
 1055 1060 1065

Lys Val Asn Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
 1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys
 1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys
 1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro
 1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys
 1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile
 1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu
 1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser
 1175 1180

<210> 46 <211> 9 <212> PRT <213> Homo sapiens <220> <221>
 MISC_FEATURE <222> (4)..(4) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (6)..(7) <223> Xaa can be any amino
 acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val
 1 5

<210> 49 <211> 237 <212> PRT <213> Homo sapiens <400> 49

Met Thr Ser Glu Ile Thr Tyr Ala Glu Val Arg Phe Lys Asn Glu Phe
 1 5 10 15

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg
 20 25 30

Thr Ala Pro His Lys Ser Asn Thr Gly Phe Pro Lys Leu Leu Cys Ala
 35 40 45

Ser Leu Leu Ile Phe Phe Leu Leu Ala Ile Ser Phe Phe Ile Ala
 50 55 60

Phe Val Ile Phe Phe Gln Lys Tyr Ser Gln Leu Leu Glu Lys Lys Thr
 65 70 75 80

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met
 85 90 95

Pro Val Glu Glu Thr Ala Trp Ser Cys Cys Pro Lys Asn Trp Lys Ser
 100 105 110

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln

115

120

125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile
 130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu
 145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp
 165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His
 180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe
 195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly
 210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu
 225 230 235

<210> 53 <211> 32 <212> PRT <213> Homo sapiens <220> <221>
 MISC_FEATURE <222> (2)..(2) <223> Xaa is Ile or Leu

<220> <221> MISC_FEATURE <222> (3)..(3) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (8)..(25) <223> Xaa can be any amino
 acid

<220> <221> MISC_FEATURE <222> (26)..(26) <223> Xaa is Thr or Asn

<220> <221> MISC_FEATURE <222> (31)..(31) <223> Xaa is Ile or Val

<220> <221> MISC_FEATURE <222> (32)..(32) <223> Xaa is Lys or Arg

<400> 53

Glu Xaa Xaa Tyr Ala Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Tyr Ser Glu Xaa Xaa
 20 25 30

<210> 54 <211> 6 <212> PRT <213> Homo sapiens <220> <221>

MISC_FEATURE <222> (1)..(1) <223> Xaa is Thr or Asn

<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa is Ile or Val

<400> 54

Xaa Glu Tyr Ser Glu Xaa

1 5

<210> 56 <211> 626 <212> PRT <213> Homo sapiens <400> 56

Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala
20 25 30

Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp
35 40 45

Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro
50 55 60

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val
65 70 75 80

Val His Glu Ser Phe Gln Gly Arg Ser Arg Leu Leu Gly Asp Leu Gly
85 90 95

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly
100 105 110

Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr
115 120 125

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val
130 135 140

Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met
145 150 155 160

Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly
165 170 175

His Glu Gly Leu Gly Glu Pro Ala Val Leu Gly Arg Leu Arg Glu Asp
 180 185 190

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg
 195 200 205

Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ser Phe Pro Asn Thr
 210 215 220

Thr Leu Gln Phe Glu Gly Tyr Ala Ser Met Asp Val Lys Tyr Pro Pro
 225 230 235 240

Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His
 245 250 255

Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr
 260 265 270

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu
 275 280 285

Leu Leu Glu Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala
 290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu
 305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val
 325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn
 340 345 350

Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ser Thr
 355 360 365

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro
 370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln
 385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu
 405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys
 420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser
 435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu
 450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala
 465 470 475 480

Gln Ala Pro Pro Arg Val Ile Cys Thr Ala Arg Asn Leu Tyr Gly Ala
 485 490 495

Lys Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala
 500 505 510

Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala
 515 520 525

Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu
 530 535 540

Ser Pro Ser Phe Ser Ala Gly Asp Asn Pro Pro Val Leu Phe Ser Ser
 545 550 555 560

Asp Phe Arg Ile Ser Gly Ala Pro Glu Lys Tyr Glu Ser Glu Arg Arg
 565 570 575

Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu
 580 585 590

Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys
 595 600 605

Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg
 610 615 620

Val Lys
 625

<210> 63 <211> 209 <212> PRT <213> Homo sapiens <400> 63
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 Gln Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro
 20 25 30
 Phe Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp
 35 40 45
 Ile Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro
 50 55 60
 Ala Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met
 65 70 75 80
 Tyr Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp
 85 90 95
 Leu Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys
 100 105 110
 Asp Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala
 115 120 125
 Thr Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val
 130 135 140
 Gln Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp
 145 150 155 160
 Phe Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys
 165 170 175
 Leu Glu Lys Ile Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asp
 180 185 190
 Val Ile Tyr Glu Met Tyr Thr Gln Met Asn Ala Glu Leu Asn Tyr Lys
 195 200 205
 Val

<210> 64 <211> 276 <212> PRT <213> Homo sapiens <400> 64

Met Gly Asn Ser Met Lys Ser Thr Pro Ala Pro Ala Glu Arg Pro Leu
 1 5 10 15
 Pro Asn Pro Glu Gly Leu Asp Ser Asp Phe Leu Ala Val Leu Ser Asp
 20 25 30
 Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys
 35 40 45
 Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu
 50 55 60
 Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val
 65 70 75 80
 Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu
 85 90 95
 Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu
 100 105 110
 Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln
 115 120 125
 Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile
 130 135 140
 Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr
 145 150 155 160
 Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu
 165 170 175
 Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val
 180 185 190
 Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln
 195 200 205
 Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu
 210 215 220
 Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr
 225 230 235 240

Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu
 245 250 255

Met Tyr Gly Gly Ser Lys Arg Lys Ser Ser Phe Phe Ser Ser Pro Pro
 260 265 270

Tyr Phe Glu Asp
 275

<210> 65 <211> 18 <212> PRT <213> Homo sapiens <400> 65

Lys Arg Phe Lys Gln Asp Gly Gly Trp Ser His Trp Ser Pro Trp Ser
 1 5 10 15

Ser Cys

<210> 66 <211> 18 <212> PRT <213> Homo sapiens <400> 66

Lys Arg Ala Lys Ala Ala Gly Gly Trp Ser His Trp Ser Pro Trp Ser
 1 5 10 15

Ser Cys

<210> 67 <211> 1784 <212> DNA <213> Staphylococcus aureus <220>
 <221> CDS <222> (184)..(1635) <223>

<400> 67
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 aatattttatt ttataagttg taaaacttac ctttaaattt aattataaat atagatttta 120
 gtattgcaat acataattcg ttatattatg atgactatac aaatacatag aggggggtatt 180
 aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt 228
 Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly
 1 5 10 15
 att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca 276
 Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr
 20 25 30
 cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt 324
 Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe
 35 40 45
 tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt 372
 Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly
 50 55 60
 ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta 420
 Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu

65	70	75	
ggt gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala 80 85 90 95			468
caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc Gln Gln Asn Asn Phe Asp Lys Asp Gln Ser Ala Phe Tyr Glu Ile 100 105 110			516
ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln 115 120 125			564
agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala 130 135 140			612
aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn 145 150 155			660
aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu 160 165 170 175			708
aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro 180 185 190			756
agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser 195 200 205			804
caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala 210 215 220			852
ttc tat gaa atc tta cat tta cct aac tta aac gaa gaa caa cgc aat Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn 225 230 235			900
ggt ttc atc caa agc cta aaa gat gac cca agc caa agc gct aac ctt Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu 240 245 250 255			948
tta gca gaa gct aaa aag cta aat gat gct caa gca cca aaa gct gac Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp 260 265 270			996
aac aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa att tta cat Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His 275 280 285			1044
tta cct aac tta act gaa gaa caa cgt aac ggc ttc atc caa agc ctt Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu 290 295 300			1092
aaa gac gat cct tcg gtg agc aaa gaa att tta gca gaa gct aaa aag Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys			1140

305	310	315	
cta aac gat gct caa gca cca aaa gag gaa gac aat aac aag cct ggc Leu Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly 320 325 330 335			1188
aaa gaa gac aat aac aag cct ggc aaa gaa gac aat aac aag cct ggc Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly 340 345 350			1236
aaa gaa gac aac aac aag cct ggc aaa gaa gac aac aac aag cct ggt Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly 355 360 365			1284
aaa gaa gac aac aac aag cct ggc aaa gaa gac ggc aac aag cct ggt Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 370 375 380			1332
aaa gaa gac aac aaa aaa cct ggt aaa gaa gat ggc aac aag cct ggt Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 385 390 395			1380
aaa gaa gac aac aaa aaa cct ggt aaa gaa gac ggc aac aag cct ggc Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 400 405 410 415			1428
aaa gaa gat ggc aac aaa cct ggt aaa gaa gat ggt aac gga gta cat Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His 420 425 430			1476
gtc gtt aaa ctt ggt gat aca gta aat gac att gca aaa gca aac ggc Val Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly 435 440 445			1524
act act gct gac aaa att gct gca gat aac aaa ttg gct gat aaa aac Thr Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn 450 455 460			1572
atg atc aaa ctt ggt caa gaa ctt gtt gtt gat aag aag caa cca caa Met Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln 465 470 475			1620
acc atg cag agc taa caaagctcaa gcattatcag aaactggcga agaaaatcca Thr Met Gln Ser 480			1675
ttcatcggtgta caactgtatt tggtggatta tcattagcct taggtgcagc gttattagct			1735
ggacgtcgtc gcgaactata aaaacaaaca atacacaacg atagatatc			1784
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Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro 20 25 30			

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
 275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
 290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
 305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
 325 330 335

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
 340 345 350

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
 355 360 365

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 370 375 380

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 385 390 395 400

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 405 410 415

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
 420 425 430

Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
 435 440 445

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
 450 455 460

Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln Thr
 465 470 475 480

Met Gln Ser

<210> 69 <211> 279 <212> DNA <213> Homo sapiens <220> <221> CDS
 <222> (1)..(279) <223>

<400> 69
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 Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
 1 5 10 15
 cgt ctg ctg ctg gtg tgc cat gtc tca gga ttc tac cca aag cct gta 96
 Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30
 tgg gtg aag tgg atg cgg ggt gag cag gag cag cag ggc act cag cca 144
 Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro
 35 40 45
 ggg gac atc ctg ccc aat gct gac gag aca tgg tat ctc cga gca acc 192
 Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60
 ctg gat gtg gtg gct ggg gag gca gct ggc ctg tcc tgt cgg gtg aag 240
 Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80
 cac agc agt cta gag ggc cag gac atc gtc ctc tac tgg 279
 His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

<210> 70 <211> 93 <212> PRT <213> Homo sapiens <400> 70
 Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
 1 5 10 15
 Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30
 Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro
 35 40 45
 Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60
 Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80
 His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

<210> 71 <211> 1873 <212> DNA <213> Mus musculus <220> <221> CDS
 <222> (173)..(175) <223>
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aggaagggac aggggtgacac cccaggatta cataaattta caggggctgc cgaattggtc	60
gaacaagccc gtggaacctg gaagccagag aacaccatcg ctgtaaagga aagaaactga	120
agctttttctc ggagcctatc tgggctgctc aaactttcag aatctaccga cc atg	175
Met	
1	
gtgagtcaga cagactgtct tgggggtggaa ctggagccaa cctgaggaat ctcaggggtcc	235
tggcaggagt ctccctgtcc cctacttttc tcctcag gag cgt gtg ctt ggc ttg	290
Glu Arg Val Leu Gly Leu	5
ttg ctg ttg ctt ctg gtg cac gcc tct ccc gcc cca cca gag ccc tgc	338
Leu Leu Leu Leu Leu Val His Ala Ser Pro Ala Pro Pro Glu Pro Cys	
10 15 20	
gag cta gac gag gaa agt tgc tcc tgc aac ttc tca gat ccg aag cca	386
Glu Leu Asp Glu Glu Ser Cys Ser Cys Asn Phe Ser Asp Pro Lys Pro	
25 30 35	
gat tgg tcc agc gct ttc aat tgt ttg ggg gcg gca gat gtg gaa ttg	434
Asp Trp Ser Ser Ala Phe Asn Cys Leu Gly Ala Ala Asp Val Glu Leu	
40 45 50 55	
tac ggc ggc ggc cgc agc ctg gaa tac ctt cta aag cgt gtg gac acg	482
Tyr Gly Gly Gly Arg Ser Leu Glu Tyr Leu Leu Lys Arg Val Asp Thr	
60 65 70	
gaa gca gat ctg ggg cag ttc act gat att atc aag tct ctg tcc tta	530
Glu Ala Asp Leu Gly Gln Phe Thr Asp Ile Ile Lys Ser Leu Ser Leu	
75 80 85	
aag cgg ctt acg gtg cgg gcc gcg cgg att cct agt cgg att cta ttc	578
Lys Arg Leu Thr Val Arg Ala Ala Arg Ile Pro Ser Arg Ile Leu Phe	
90 95 100	
gga gcc ctg cgt gtg ctc ggg att tcc ggc ctc cag gaa ctg act ctt	626
Gly Ala Leu Arg Val Leu Gly Ile Ser Gly Leu Gln Glu Leu Thr Leu	
105 110 115	
gaa aat ctc gag gta acc ggc acc gcg ccg cca ccg ctt ctg gaa gcc	674
Glu Asn Leu Glu Val Thr Gly Thr Ala Pro Pro Pro Leu Leu Glu Ala	
120 125 130 135	
acc gga ccc gat ctc aac atc ttg aac ctc cgc aac gtg tcg tgg gca	722
Thr Gly Pro Asp Leu Asn Ile Leu Asn Leu Arg Asn Val Ser Trp Ala	
140 145 150	
aca agg gat gcc tgg ctc gca gaa ctg cag cag tgg cta aag cct gga	770
Thr Arg Asp Ala Trp Leu Ala Glu Leu Gln Gln Trp Leu Lys Pro Gly	
155 160 165	
ctc aag gta ctg agt att gcc caa gca cac tca ctc aac ttt tcc tgc	818
Leu Lys Val Leu Ser Ile Ala Gln Ala His Ser Leu Asn Phe Ser Cys	
170 175 180	
gaa cag gtc cgc gtc ttc cct gcc ctc tcc acc tta gac ctg tct gac	866
Glu Gln Val Arg Val Phe Pro Ala Leu Ser Thr Leu Asp Leu Ser Asp	

185	190	195	
aat cct gaa ttg ggc gag aga gga ctg atc tca gcc ctc tgt ccc ctc			914
Asn Pro Glu Leu Gly Glu Arg Gly Leu Ile Ser Ala Leu Cys Pro Leu			
200	205	210	215
aag ttc ccg acc ctc caa gtt tta gcg ctg cgt aac gcg ggg atg gag			962
Lys Phe Pro Thr Leu Gln Val Leu Ala Leu Arg Asn Ala Gly Met Glu			
	220	225	230
acg ccc agc ggc gtg tgc tct gcg ctg gcc gca gca agg gta cag ctg			1010
Thr Pro Ser Gly Val Cys Ser Ala Leu Ala Ala Ala Arg Val Gln Leu			
	235	240	245
caa gga cta gac ctt agt cac aat tca ctg cgg gat gct gca ggc gct			1058
Gln Gly Leu Asp Leu Ser His Asn Ser Leu Arg Asp Ala Ala Gly Ala			
	250	255	260
ccg agt tgt gac tgg ccc agt cag cta aac tcg ctc aat ctg tct ttc			1106
Pro Ser Cys Asp Trp Pro Ser Gln Leu Asn Ser Leu Asn Leu Ser Phe			
	265	270	275
act ggg ctg aag cag gta cct aaa ggg ctg cca gcc aag ctc agc gtg			1154
Thr Gly Leu Lys Gln Val Pro Lys Gly Leu Pro Ala Lys Leu Ser Val			
	280	285	290
ctg gat ctc agt tac aac agg ctg gat agg aac cct agc cca gat gag			1202
Leu Asp Leu Ser Tyr Asn Arg Leu Asp Arg Asn Pro Ser Pro Asp Glu			
	300	305	310
ctg ccc caa gtg ggg aac ctg tca ctt aaa gga aat ccc ttt ttg gac			1250
Leu Pro Gln Val Gly Asn Leu Ser Leu Lys Gly Asn Pro Phe Leu Asp			
	315	320	325
tct gaa tcc cac tcg gag aag ttt aac tct ggc gta gtc acc gcc gga			1298
Ser Glu Ser His Ser Glu Lys Phe Asn Ser Gly Val Val Thr Ala Gly			
	330	335	340
gct cca tca tcc caa gca gtg gcc ttg tca gga act ctg gct ttg ctc			1346
Ala Pro Ser Ser Gln Ala Val Ala Leu Ser Gly Thr Leu Ala Leu Leu			
	345	350	355
cta gga gat cgc ctc ttt gtt taaggaacat ttgcatcctc ctggtttctg			1397
Leu Gly Asp Arg Leu Phe Val			
	360	365	
agggtcctcg tcaacgaatc ctctgcttta aatttatttaa aatcttaatc cacgatgtaa			1457
ggaaagaaag gcagtcaga tggttcagtg ggtaaaagcc agcaaacttg acccctgatt			1517
ttaaccctca ggatccacac ggaaggggaa aactcactcc tgaaagttgt ccatctgtgc			1577
tcacaaataa atatttttta aaataacaat gtgtttgttg gttttgtttt tgtttgggtt			1637
ttgttggtgt tttgtttgtt ttgtttgtt tttgagacag tctggctatg tatccttggc			1697
tggcctcaaa ctcataaaga tcaagatcgg cctgcctcta cctccaaatg ctctgggttaa			1757
agggatgtgc ctccatgccc agttgaagtc atcctgaacc acgagtccag gccactcact			1817

ctttactaag atctttacta agtatctgcc ataggtcagg ctcaagtgcta aatgag

1873

<210> 72 <211> 366 <212> PRT <213> Mus musculus <400> 72

Met	Glu	Arg	Val	Leu	Gly	Leu	Leu	Leu	Leu	Leu	Leu	Val	His	Ala	Ser
1				5					10					15	

Pro	Ala	Pro	Pro	Glu	Pro	Cys	Glu	Leu	Asp	Glu	Glu	Ser	Cys	Ser	Cys
			20					25					30		

Asn	Phe	Ser	Asp	Pro	Lys	Pro	Asp	Trp	Ser	Ser	Ala	Phe	Asn	Cys	Leu
		35					40					45			

Gly	Ala	Ala	Asp	Val	Glu	Leu	Tyr	Gly	Gly	Gly	Arg	Ser	Leu	Glu	Tyr
50						55					60				

Leu	Leu	Lys	Arg	Val	Asp	Thr	Glu	Ala	Asp	Leu	Gly	Gln	Phe	Thr	Asp
65					70					75					80

Ile	Ile	Lys	Ser	Leu	Ser	Leu	Lys	Arg	Leu	Thr	Val	Arg	Ala	Ala	Arg
				85					90					95	

Ile	Pro	Ser	Arg	Ile	Leu	Phe	Gly	Ala	Leu	Arg	Val	Leu	Gly	Ile	Ser
			100					105					110		

Gly	Leu	Gln	Glu	Leu	Thr	Leu	Glu	Asn	Leu	Glu	Val	Thr	Gly	Thr	Ala
		115					120					125			

Pro	Pro	Pro	Leu	Leu	Glu	Ala	Thr	Gly	Pro	Asp	Leu	Asn	Ile	Leu	Asn
			130			135					140				

Leu	Arg	Asn	Val	Ser	Trp	Ala	Thr	Arg	Asp	Ala	Trp	Leu	Ala	Glu	Leu
145					150					155					160

Gln	Gln	Trp	Leu	Lys	Pro	Gly	Leu	Lys	Val	Leu	Ser	Ile	Ala	Gln	Ala
				165					170					175	

His	Ser	Leu	Asn	Phe	Ser	Cys	Glu	Gln	Val	Arg	Val	Phe	Pro	Ala	Leu
			180					185					190		

Ser	Thr	Leu	Asp	Leu	Ser	Asp	Asn	Pro	Glu	Leu	Gly	Glu	Arg	Gly	Leu
		195					200					205			

Ile	Ser	Ala	Leu	Cys	Pro	Leu	Lys	Phe	Pro	Thr	Leu	Gln	Val	Leu	Ala
			210			215					220				

Leu Arg Asn Ala Gly Met Glu Thr Pro Ser Gly Val Cys Ser Ala Leu
225 230 235 240

Ala Ala Ala Arg Val Gln Leu Gln Gly Leu Asp Leu Ser His Asn Ser
245 250 255

Leu Arg Asp Ala Ala Gly Ala Pro Ser Cys Asp Trp Pro Ser Gln Leu
260 265 270

Asn Ser Leu Asn Leu Ser Phe Thr Gly Leu Lys Gln Val Pro Lys Gly
275 280 285

Leu Pro Ala Lys Leu Ser Val Leu Asp Leu Ser Tyr Asn Arg Leu Asp
290 295 300

Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu
305 310 315 320

Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn
325 330 335

Ser Gly Val Val Thr Ala Gly Ala Pro Ser Ser Gln Ala Val Ala Leu
340 345 350

Ser Gly Thr Leu Ala Leu Leu Leu Gly Asp Arg Leu Phe Val
355 360 365

<210> 73 <211> 365 <212> PRT <213> Mus musculus <400> 73

Met Asp Lys Phe Trp Trp His Thr Ala Trp Gly Leu Cys Leu Leu Gln
1 5 10 15

Leu Ser Leu Ala His Pro His Gln Gln Ile Asp Leu Asn Val Thr Cys
20 25 30

Arg Tyr Ala Gly Val Phe His Val Glu Lys Asn Gly Arg Tyr Ser Ile
35 40 45

Ser Arg Thr Glu Ala Ala Asp Leu Cys Gln Ala Phe Asn Ser Thr Leu
50 55 60

Pro Thr Met Asp Gln Met Lys Leu Ala Leu Ser Lys Gly Phe Glu Thr
65 70 75 80

Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His

85

90

95

Pro Asn Ala Ile Cys Ala Ala Asn His Thr Gly Val Tyr Ile Leu Val
 100 105 110

Thr Ser Asn Thr Ser His Tyr Asp Thr Tyr Cys Phe Asn Ala Ser Ala
 115 120 125

Pro Pro Glu Glu Asp Cys Thr Ser Val Thr Asp Leu Pro Asn Ser Phe
 130 135 140

Asp Gly Pro Val Thr Ile Thr Ile Val Asn Arg Asp Gly Thr Arg Tyr
 145 150 155 160

Ser Lys Lys Gly Glu Tyr Arg Thr His Gln Glu Asp Ile Asp Ala Ser
 165 170 175

Asn Ile Ile Asp Asp Asp Val Ser Ser Gly Ser Thr Ile Glu Lys Ser
 180 185 190

Thr Pro Glu Ser Tyr Ile Leu His Thr Tyr Leu Pro Thr Glu Gln Pro
 195 200 205

Thr Gly Asp Gln Asp Asp Ser Phe Phe Ile Arg Ser Thr Leu Ala Thr
 210 215 220

Arg Asp Arg Asp Ser Ser Lys Asp Ser Arg Gly Ser Ser Arg Thr Val
 225 230 235 240

Thr His Gly Ser Glu Leu Ala Gly His Ser Ser Ala Asn Gln Asp Ser
 245 250 255

Gly Val Thr Thr Thr Ser Gly Pro Met Arg Arg Pro Gln Ile Pro Glu
 260 265 270

Trp Leu Ile Ile Leu Ala Ser Leu Leu Ala Leu Ala Leu Ile Leu Ala
 275 280 285

Val Cys Ile Ala Val Asn Ser Arg Arg Arg Cys Gly Gln Lys Lys Lys
 290 295 300

Leu Val Ile Asn Gly Gly Asn Gly Thr Val Glu Asp Arg Lys Pro Ser
 305 310 315 320

Glu Leu Asn Gly Glu Ala Ser Lys Ser Gln Glu Met Val His Leu Val

325

330

335

Asn Lys Glu Pro Ser Glu Thr Pro Asp Gln Cys Met Thr Ala Asp Glu
 340 345 350

Thr Arg Asn Leu Gln Ser Val Asp Met Lys Ile Gly Val
 355 360 365

<210> 74 <211> 371 <212> PRT <213> Mus musculus <400> 74

Met Asn Val Lys Gly Lys Val Ile Leu Leu Met Leu Ile Val Ser Thr
 1 5 10 15

Val Val Val Val Phe Trp Glu Tyr Val Asn Ser Pro Asp Gly Ser Phe
 20 25 30

Leu Trp Ile Tyr His Thr Lys Ile Pro Glu Val Gly Glu Asn Arg Trp
 35 40 45

Gln Lys Asp Trp Trp Phe Pro Ser Trp Phe Lys Asn Gly Thr His Ser
 50 55 60

Tyr Gln Glu Asp Asn Val Glu Gly Arg Arg Glu Lys Gly Arg Asn Gly
 65 70 75 80

Asp Arg Ile Glu Glu Pro Gln Leu Trp Asp Trp Phe Asn Pro Lys Asn
 85 90 95

Arg Pro Asp Val Leu Thr Val Thr Pro Trp Lys Ala Pro Ile Val Trp
 100 105 110

Glu Gly Thr Tyr Asp Thr Ala Leu Leu Glu Lys Tyr Tyr Ala Thr Gln
 115 120 125

Lys Leu Thr Val Gly Leu Thr Val Phe Ala Val Gly Lys Tyr Ile Glu
 130 135 140

His Tyr Leu Glu Asp Phe Leu Glu Ser Ala Asp Met Tyr Phe Met Val
 145 150 155 160

Gly His Arg Val Ile Phe Tyr Val Met Ile Asp Asp Thr Ser Arg Met
 165 170 175

Pro Val Val His Leu Asn Pro Leu His Ser Leu Gln Val Phe Glu Ile
 180 185 190

Arg Ser Glu Lys Arg Trp Gln Asp Ile Ser Met Met Arg Met Lys Thr
 195 200 205

Ile Gly Glu His Ile Leu Ala His Ile Gln His Glu Val Asp Phe Leu
 210 215 220

Phe Cys Met Asp Val Asp Gln Val Phe Gln Asp Asn Phe Gly Val Glu
 225 230 235 240

Thr Leu Gly Gln Leu Val Ala Gln Leu Gln Ala Trp Trp Tyr Lys Ala
 245 250 255

Ser Pro Glu Lys Phe Thr Tyr Glu Arg Arg Glu Leu Ser Ala Ala Tyr
 260 265 270

Ile Pro Phe Gly Glu Gly Asp Phe Tyr Tyr His Ala Ala Ile Phe Gly
 275 280 285

Gly Thr Pro Thr His Ile Leu Asn Leu Thr Arg Glu Cys Phe Lys Gly
 290 295 300

Ile Leu Gln Asp Lys Lys His Asp Ile Glu Ala Gln Trp His Asp Glu
 305 310 315 320

Ser His Leu Asn Lys Tyr Phe Leu Phe Asn Lys Pro Thr Lys Ile Leu
 325 330 335

Ser Pro Glu Tyr Cys Trp Asp Tyr Gln Ile Gly Leu Pro Ser Asp Ile
 340 345 350

Lys Ser Val Lys Val Ala Trp Gln Thr Lys Glu Tyr Asn Leu Val Arg
 355 360 365

Asn Asn Val
 370

<210> 75 <211> 79 <212> DNA <213> Homo sapiens <220> <221> CDS
 <222> (3)..(77) <223>

<400> 75
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 Ser Leu Thr Gly Glu Gly Thr Gln Pro Gln His Phe Gly Asp Gly
 1 5 10 15

47

act cga ctc tcc atc cta gag gac ctg aac aa
 Thr Arg Leu Ser Ile Leu Glu Asp Leu Asn
 20 25

79

<210> 76 <211> 25 <212> PRT <213> Homo sapiens <400> 76

Ser Leu Thr Gly Glu Gly Thr Gln Pro Gln His Phe Gly Asp Gly Thr
1 5 10 15

Arg Leu Ser Ile Leu Glu Asp Leu Asn
20 25

<210> 77 <211> 1197 <212> DNA <213> Streptococcus pyogenes <220>
<221> CDS <222> (106)..(1119) <223>

<400> 77
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ggcatgggtca gacagtccac aaattatatt agacggaggt aaaaa atg agt gaa aat 117
Met Ser Glu Asn
1

ata ccg ctg cga gtc caa ttt aag cgc atg aaa gcc gcc gag tgg gct 165
Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala Ala Glu Trp Ala
5 10 15 20

cgt agt gat gtc atc tta ctg gag agc gag ata gcc ttt gag aca gac 213
Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly Phe Glu Thr Asp
25 30 35

aca ggt ttt gcc aga gca ggt gat ggg cac aat cga ttt agt gac ctt 261
Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg Phe Ser Asp Leu
40 45 50

gga tac att agt cca ctc gat tac aat cta ctg act aac aag cca aat 309
Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr Asn Lys Pro Asn
55 60 65

att gat gga tta gcg aca aaa gtc gag acc gct cag aaa cta caa caa 357
Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln Lys Leu Gln Gln
70 75 80

aaa gca gat aaa gag acc gtc tat aca aaa gct gaa tcg aag caa gag 405
Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu Ser Lys Gln Glu
85 90 95 100

ctt gac aag aaa tta aat ctc aaa ggt ggc gtt atg aca ggt caa cta 453
Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met Thr Gly Gln Leu
105 110 115

aaa ttt aag cca gcc gcc act gtt gct tat tcc tcg tca acg ggt gga 501
Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser Ser Thr Gly Gly
120 125 130

gcg gtc aat att gac ttg tcg tct acc aga ggt gct ggt gtt gtt gtc 549
Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala Gly Val Val Val
135 140 145

tat tct gac aat gat acc agt gat ggg ccg tta atg agc ttg cgg acg 597
Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met Ser Leu Arg Thr

150 155 160
 ggt aaa gag acc ttt aat caa tcg gcg ctt ttt gtc gac tat aag ggg 645
 Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val Asp Tyr Lys Gly
 165 170 175 180
 aca aca aat gcc gtt aat att gcg atg cgt cac gca acc acc ccc aat 693
 Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala Thr Thr Pro Asn
 185 190 195
 ttt tca tcg gcg ctt aat att act agc ggc aat gaa aat ggt agt gca 741
 Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu Asn Gly Ser Ala
 200 205 210
 atg cag cta cga ggg tca gaa aaa gcg cta gga acg cta aaa att act 789
 Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr Leu Lys Ile Thr
 215 220 225
 cat gag aac cca agt att gga gcg gat tat gat aaa aat gcg gca cgt 837
 His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys Asn Ala Ala Arg
 230 235 240
 tat cca ttg ata ttg tca aaa aga caa aac ggt gca gga aca gcc gct 885
 Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala
 245 250 255 260
 cag gga atc tac att aac tca acc tca ggc acg aca ggg aag ttg ctt 933
 Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr Gly Lys Leu Leu
 265 270 275
 agg att aga aac ctt agt gat gat aag ttc tac gtc aag tct gac ggt 981
 Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val Lys Ser Asp Gly
 280 285 290
 ggt ttt tat gcc aag gaa act tcg cag att gat ggc aac ctg aaa ctc 1029
 Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly Asn Leu Lys Leu
 295 300 305
 aag gac ccc aca gcg aat gat cat gcg gca acc aaa gct tat gta gat 1077
 Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys Ala Tyr Val Asp
 310 315 320
 aaa gca att tct gag tta aaa aaa ctc ata cta aaa aaa tag 1119
 Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys Lys
 325 330 335
 attaaggagg ataaatgagc agagacccaa cacttatattt agacgagtca aacctcgtaa 1179
 ttggaagga tggacgtg 1197

<210> 78 <211> 337 <212> PRT <213> Streptococcus pyogenes <400> 78

Met Ser Glu Asn Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala
 1 5 10 15

Ala Glu Trp Ala Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly
 20 25 30

Phe Glu Thr Asp Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg
35 40 45

Phe Ser Asp Leu Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr
50 55 60

Asn Lys Pro Asn Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln
65 70 75 80

Lys Leu Gln Gln Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu
85 90 95

Ser Lys Gln Glu Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met
100 105 110

Thr Gly Gln Leu Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser
115 120 125

Ser Thr Gly Gly Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala
130 135 140

Gly Val Val Val Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met
145 150 155 160

Ser Leu Arg Thr Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val
165 170 175

Asp Tyr Lys Gly Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala
180 185 190

Thr Thr Pro Asn Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu
195 200 205

Asn Gly Ser Ala Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr
210 215 220

Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys
225 230 235 240

Asn Ala Ala Arg Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala
245 250 255

Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr
260 265 270

Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val
 275 280 285

Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly
 290 295 300

Asn Leu Lys Leu Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys
 305 310 315 320

Ala Tyr Val Asp Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys
 325 330 335

Lys

<210> 79 <211> 1497 <212> DNA <213> Bacteriophage T270 <220> <221>
 CDS <222> (286)..(1374) <223>

<400> 79
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 gaacatcaat tgcttgaaaa tatcgataat tagttaatct aaaacaaaaa gccccacgct 180
 ctcaaagttt ggcgactctg agcgtgaggc aagacagtat aagaaacaac cattaaaaag 240
 gtcattttct tgtacctatt ttatcaaatt gaaagatggt atgca atg aaa att aaa 297
 Met Lys Ile Lys
 1

tca tat aaa aag gaa aat ggt gaa act gct tat aaa ttt ctt ttg tat 345
 Ser Tyr Lys Lys Glu Asn Gly Glu Thr Ala Tyr Lys Phe Leu Leu Tyr
 5 10 15 20

gcc ggt tat gtt aat gga aag aga aaa tat att agg cga gaa ggt ttc 393
 Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg Arg Glu Gly Phe
 25 30 35

aaa act aag cag gct gca agg gaa acc tta att agt tta caa gct gaa 441
 Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser Leu Gln Ala Glu
 40 45 50

ctt gat aaa cct aaa tca agt atg aca ttt gga gca ttg aca gat caa 489
 Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala Leu Thr Asp Gln
 55 60 65

tgg cta aag gaa tat gaa aaa acc gtt cag ggc agt acc tac tta aaa 537
 Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser Thr Tyr Leu Lys
 70 75 80

aca gaa aga aat att aat aaa cat att ttg cca aaa ctt gat aaa gtg 585
 Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys Leu Asp Lys Val
 85 90 95 100

aag att gga gac atc aat cca cta ctt atc cag cgg ctt act gaa gaa Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg Leu Thr Glu Glu 105 110 115	633
tgg tgc aac gat tta aaa tat gga gga aaa att ctt ggg ctt gtt agg Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu Gly Leu Val Arg 120 125 130	681
aat atc tta aat cta gct gtt aga tac gga tat atc aat aac aat cca Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile Asn Asn Asn Pro 135 140 145	729
gct ttg cca att aca cct cca aaa ata aaa agg aaa aga aaa atg aat Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys Arg Lys Met Asn 150 155 160	777
aat aat ttt tat aca ctt gat caa ctt aaa caa ttc ctt gaa cta gtt Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe Leu Glu Leu Val 165 170 175 180	825
gaa aaa act gac aac att gaa aaa ata gcc ttg ttt aga tta tta gca Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe Arg Leu Leu Ala 185 190 195	873
ttt act gga ata cga aaa ggg gag ctt ctg gca cta act tgg gat gat Phe Thr Gly Ile Arg Lys Gly Glu Leu Ala Leu Thr Trp Asp Asp 200 205 210	921
ttg aat ggt aat act cta tca att aat aaa gct gtc aca cgt act caa Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val Thr Arg Thr Gln 215 220 225	969
gtt gga cta gaa ata gat gtt acg aag aca aaa tca agc gat aga tta Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser Ser Asp Arg Leu 230 235 240	1017
atc agc tta gat gat gaa act ttg gaa att tta caa gaa ctt cat gaa Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln Glu Leu His Glu 245 250 255 260	1065
act ttt cct act tct act ctt atg ttc caa tct aaa tca ggt gga att Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys Ser Gly Gly Ile 265 270 275	1113
atg acg cca agt tta cca cga aaa tgg cta ttg caa att atc aaa ggg Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln Ile Ile Lys Gly 280 285 290	1161
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 Thr Asn Lys Gln Leu Asp
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Thr Tyr Leu Lys Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys
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Leu Asp Lys Val Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg
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Leu Thr Glu Glu Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu
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Gly Leu Val Arg Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile
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Asn Asn Asn Pro Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys
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Arg Lys Met Asn Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe
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Leu Glu Leu Val Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe
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Arg Leu Leu Ala Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu
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Thr Trp Asp Asp Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val
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Thr Arg Thr Gln Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser
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Ser Asp Arg Leu Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln
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Glu Leu His Glu Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys
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Ser Gly Gly Ile Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln
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Ile Ile Lys Gly Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg
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His Thr His Ala Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln
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Val Gln His Arg Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val
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Asp Thr Asp Leu Lys Leu Val Ser His Asn Val Tyr Met Leu Ser Thr	
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Val Leu Tyr Pro Asn Trp Gly Gln Tyr Lys Arg Ala Asp Leu Ile Gly	
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Gln Ser Ser Tyr Ile Lys Asn Asn Asp Val Val Ile Phe Asn Glu Ala	
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Phe Asp Asn Gly Ala Ser Asp Lys Leu Leu Ser Asn Val Lys Lys Glu	
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Lys Thr Glu Gly Ser Tyr Ser Ser Thr Val Ala Glu Asp Gly Gly Val	
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Lys Ser Gly Cys Gly Phe Asp Asn Asp Ser Asn Lys Gly Phe Val Tyr	
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 Thr Lys Ile Glu Lys Asn Gly Lys Asn Val His Val Ile Gly Thr His
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aca caa tct gaa gat tca cgt tgt ggt gct gga cat gat cga aaa att 1348
 Thr Gln Ser Glu Asp Ser Arg Cys Gly Ala Gly His Asp Arg Lys Ile
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aga gct gaa caa atg aaa gaa atc agt gac ttt gtt aaa aag aaa aat 1396
 Arg Ala Glu Gln Met Lys Glu Ile Ser Asp Phe Val Lys Lys Lys Asn
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 Ile Pro Lys Asp Glu Thr Val Tyr Ile Gly Gly Asp Leu Asn Val Asn
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 Lys Gly Thr Pro Glu Phe Lys Asp Met Leu Lys Asn Leu Asn Val Asn
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 Asp Val Leu Tyr Ala Gly His Asn Ser Thr Trp Asp Pro Gln Ser Asn
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 Ser Ile Ala Lys Tyr Asn Tyr Pro Asn Gly Lys Pro Glu His Leu Asp
 265 270 275

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 Tyr Ile Phe Thr Asp Lys Asp His Lys Gln Pro Lys Gln Leu Val Asn
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 315 320 325

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Lys Ala Glu Ser Lys Lys Asp Asp Thr Asp Leu Lys Leu Val Ser His
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Lys Arg Ala Asp Leu Ile Gly Gln Ser Ser Tyr Ile Lys Asn Asn Asp
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Val Val Ile Phe Asn Glu Ala Phe Asp Asn Gly Ala Ser Asp Lys Leu
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Leu Ser Asn Val Lys Lys Glu Tyr Pro Tyr Gln Thr Pro Val Leu Gly
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Arg Ser Gln Ser Gly Trp Asp Lys Thr Glu Gly Ser Tyr Ser Ser Thr
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Ser Asn Lys Gly Phe Val Tyr Thr Lys Ile Glu Lys Asn Gly Lys Asn
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Val His Val Ile Gly Thr His Thr Gln Ser Glu Asp Ser Arg Cys Gly
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Ala Gly His Asp Arg Lys Ile Arg Ala Glu Gln Met Lys Glu Ile Ser
195 200 205

Asp Phe Val Lys Lys Lys Asn Ile Pro Lys Asp Glu Thr Val Tyr Ile
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Gly Gly Asp Leu Asn Val Asn Lys Gly Thr Pro Glu Phe Lys Asp Met
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Leu Lys Asn Leu Asn Val Asn Asp Val Leu Tyr Ala Gly His Asn Ser
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Thr Trp Asp Pro Gln Ser Asn Ser Ile Ala Lys Tyr Asn Tyr Pro Asn
 260 265 270

Gly Lys Pro Glu His Leu Asp Tyr Ile Phe Thr Asp Lys Asp His Lys
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Gln Pro Lys Gln Leu Val Asn Glu Val Val Thr Glu Lys Pro Lys Pro
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aattacattt tggaggaatt aaaaaatt atg aaa aag caa ata att tcg cta 172
 Met Lys Lys Gln Ile Ile Ser Leu
 1 5

ggc gca tta gca gtt gca tot agc tta ttt aca tgg gat aac aaa gca 220
 Gly Ala Leu Ala Val Ala Ser Ser Leu Phe Thr Trp Asp Asn Lys Ala
 10 15 20

gat gcg ata gta aca aag gat tat agc aaa gag tca aga gtg aat gag Asp Ala Ile Val Thr Lys Asp Tyr Ser Lys Glu Ser Arg Val Asn Glu 25 30 35 40	268
aac agt aaa tat ggg aca tta att tca gac tgg tat tta aaa ggg aga Asn Ser Lys Tyr Gly Thr Leu Ile Ser Asp Trp Tyr Leu Lys Gly Arg 45 50 55	316
tta act agt cta gaa tct caa ttt atc aat gca ttg gat att tta gag Leu Thr Ser Leu Glu Ser Gln Phe Ile Asn Ala Leu Asp Ile Leu Glu 60 65 70	364
aca tat cat tat ggc gaa aaa gag tat aaa gat gca aaa gat aaa ttg Thr Tyr His Tyr Gly Glu Lys Glu Tyr Lys Asp Ala Lys Asp Lys Leu 75 80 85	412
atg aca aga att tta ggg gaa gac caa tac ctt tta gaa aga aaa aaa Met Thr Arg Ile Leu Gly Glu Asp Gln Tyr Leu Leu Glu Arg Lys Lys 90 95 100	460
gtg cag tat gag gaa tac aaa aaa tta tac caa aaa tat aaa gaa gag Val Gln Tyr Glu Glu Tyr Lys Lys Leu Tyr Gln Lys Tyr Lys Glu Glu 105 110 115 120	508
aat cca acc tct aaa ggc tta aaa ctg aaa aca ttc gat caa tat aca Asn Pro Thr Ser Lys Gly Leu Lys Leu Lys Thr Phe Asp Gln Tyr Thr 125 130 135	556
ata gaa gat tta act atg agg gaa tat aat gag tta aca gaa tca tta Ile Glu Asp Leu Thr Met Arg Glu Tyr Asn Glu Leu Thr Glu Ser Leu 140 145 150	604
aaa agt gct gta aaa gac ttt gag aaa gat gtt gaa aaa ata gaa aat Lys Ser Ala Val Lys Asp Phe Glu Lys Asp Val Glu Lys Ile Glu Asn 155 160 165	652
caa cat cat gat ttg aaa cca ttt act gat gaa atg gaa gag aag gct Gln His His Asp Leu Lys Pro Phe Thr Asp Glu Met Glu Glu Lys Ala 170 175 180	700
act tct aga gtt gat gat tta gca aat aaa gca tat agt gtt tat ttt Thr Ser Arg Val Asp Asp Leu Ala Asn Lys Ala Tyr Ser Val Tyr Phe 185 190 195 200	748
gca ttt gtt agg gat aca caa cat aaa act gag gca tta gag tta aaa Ala Phe Val Arg Asp Thr Gln His Lys Thr Glu Ala Leu Glu Leu Lys 205 210 215	796
gcg aaa gta gat tta gtt tta ggt gat gag gat aaa ccg cat cgt att Ala Lys Val Asp Leu Val Leu Gly Asp Glu Asp Lys Pro His Arg Ile 220 225 230	844
tct aat gaa aga att gaa aaa gaa atg ata aaa gat tta gaa tct att Ser Asn Glu Arg Ile Glu Lys Glu Met Ile Lys Asp Leu Glu Ser Ile 235 240 245	892
att gaa gat ttc ttt ata gaa act ggt tta aat aag cct ggt aat att Ile Glu Asp Phe Phe Ile Glu Thr Gly Leu Asn Lys Pro Gly Asn Ile 250 255 260	940

acg agt tat gat agt agt aaa cat cac tat aaa aat cac agt gaa ggt Thr Ser Tyr Asp Ser Ser Lys His His Tyr Lys Asn His Ser Glu Gly 265 270 275 280	988
ttt gag gct cta gtc aaa gaa aca aga gaa gca gta gca aac gct gac Phe Glu Ala Leu Val Lys Glu Thr Arg Glu Ala Val Ala Asn Ala Asp 285 290 295	1036
gaa tct tgg aaa act aaa act gta aaa aaa tac ggt gaa tct gaa aca Glu Ser Trp Lys Thr Lys Thr Val Lys Lys Tyr Gly Glu Ser Glu Thr 300 305 310	1084
aaa tct cct gtt gta aaa gaa gag aac aaa gtt gaa gac cct caa tca Lys Ser Pro Val Val Lys Glu Glu Asn Lys Val Glu Asp Pro Gln Ser 315 320 325	1132
cct aaa ttt gat aac caa caa gag gtt aaa act acg gct ggt aaa gct Pro Lys Phe Asp Asn Gln Gln Glu Val Lys Thr Thr Ala Gly Lys Ala 330 335 340	1180
gaa gaa aca aca caa cca gtt gca caa cca tta gtt aaa att cca cag Glu Glu Thr Thr Gln Pro Val Ala Gln Pro Leu Val Lys Ile Pro Gln 345 350 355 360	1228
ggc aca att aca ggt gaa att gtg aaa ggt ccg gaa tat cca acg atg Gly Thr Ile Thr Gly Glu Ile Val Lys Gly Pro Glu Tyr Pro Thr Met 365 370 375	1276
gaa aat aaa acg tta caa ggt gaa atc gtt caa ggt cca gat ttc cca Glu Asn Lys Thr Leu Gln Gly Glu Ile Val Gln Gly Pro Asp Phe Pro 380 385 390	1324
aca atg gaa caa agc ggt cca tct tta agc gac aat tat act caa ccg Thr Met Glu Gln Ser Gly Pro Ser Leu Ser Asp Asn Tyr Thr Gln Pro 395 400 405	1372
acg aca ccg aac cct att tta gaa ggt ctt gaa ggt agc tca tct aaa Thr Thr Pro Asn Pro Ile Leu Glu Gly Leu Glu Gly Ser Ser Ser Lys 410 415 420	1420
ctt gaa ata aaa cca caa ggt act gaa tca acg ttg aaa ggt att caa Leu Glu Ile Lys Pro Gln Gly Thr Glu Ser Thr Leu Lys Gly Ile Gln 425 430 435 440	1468
gga gaa tca agt gat att gaa gtt aaa cct caa gca act gaa aca aca Gly Glu Ser Ser Asp Ile Glu Val Lys Pro Gln Ala Thr Glu Thr Thr 445 450 455	1516
gaa gct tct caa tat ggt ccg aga ccg caa ttt aac aaa aca cct aag Glu Ala Ser Gln Tyr Gly Pro Arg Pro Gln Phe Asn Lys Thr Pro Lys 460 465 470	1564
tat gtg aaa tat aga gat gct ggt aca ggt att cgt gaa tac aac gat Tyr Val Lys Tyr Arg Asp Ala Gly Thr Gly Ile Arg Glu Tyr Asn Asp 475 480 485	1612
gga aca ttt gga tat gaa gcg aga cca aga ttc aac aag cca tca gaa Gly Thr Phe Gly Tyr Glu Ala Arg Pro Arg Phe Asn Lys Pro Ser Glu 490 495 500	1660

aca aac gca tac aac gta acg aca aat caa gat ggc aca gta tca tac Thr Asn Ala Tyr Asn Val Thr Thr Asn Gln Asp Gly Thr Val Ser Tyr 505 510 515 520	1708
ggc gcc cgc cca aca caa aac aag gca tca gaa aca aac gca tat aac Gly Ala Arg Pro Thr Gln Asn Lys Ala Ser Glu Thr Asn Ala Tyr Asn 525 530 535	1756
gta aca aca cat gca aac ggc caa gta tca tac gga gct cgc cca aca Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr 540 545 550	1804
caa aag aag cca agc gaa aca aat gca tat aac gta aca aca cat gca Gln Lys Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala 555 560 565	1852
aac ggc caa gta tca tat ggc gcc cgc ccg aca tac aac aag cca agc Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Asn Lys Pro Ser 570 575 580	1900
gaa aca aat gca tat aac gta aca aca cac gga aat ggc caa gta tca Glu Thr Asn Ala Tyr Asn Val Thr Thr His Gly Asn Gly Gln Val Ser 585 590 595 600	1948
tat gga gct cgt ccg aca tac aag aaa cca agt aaa aca aat gca tat Tyr Gly Ala Arg Pro Thr Tyr Lys Lys Pro Ser Lys Thr Asn Ala Tyr 605 610 615	1996
aac gta aca aca cat gca aac ggc caa gtg tca tac gga gct cgc cca Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro 620 625 630	2044
aca caa aac aag cca agc gaa aca aac gca tat aac gta aca aca cat Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His 635 640 645	2092
gca aat ggc caa gta toa tac gga gct cgc cca aca caa aac aag cca Ala Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro 650 655 660	2140
agc gaa aca aac gca tat aac gta aca aca cac gga aac ggt caa gtg Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Gly Asn Gly Gln Val 665 670 675 680	2188
tca tac ggc gct cgt ccg aca tac aac aag cca agt aaa aca aat gca Ser Tyr Gly Ala Arg Pro Thr Tyr Asn Lys Pro Ser Lys Thr Asn Ala 685 690 695	2236
tac aat gta aca aca cat gca gat ggt act gcg aca tat ggt cct aga Tyr Asn Val Thr Thr His Ala Asp Gly Thr Ala Thr Tyr Gly Pro Arg 700 705 710	2284
gta aca aaa taa gtttataact ctatccatag acatacagtc aatacaatac Val Thr Lys 715	2336
aaaacattac gtatctttac aacagtaatc atgcattcta tgatgcttct aactgaatta	2396
aagcatcgaa caatcgaaag catattttcta aattatttat tcattatagt cttaaacata	2456

acatgaccta atatattact aacctattaa aataaaccac gcacatctat gtgatatacg 2516
 acaatcacag caataataat tgctttagaa agtcgtaccg aactggaact tacaagtcta 2576
 gttcgaacac actgatgtga gtggttttct ttattttaaa catgaacaat cagataagtt 2636
 actagcatta gcaaataatta ttaaatcaaa gggcttcgat tcataaaatt taaaacaatg 2696
 attaaaaatta gacgtgtaaa tgttaaattc taaaacggaa ataccgcta tcctattaa 2756
 ccactttttg gttcaatcac tatatttcac acagcttcaa taataaaacg aaactgcttc 2816
 aatccgcttc aacttcaacc tacctcattc agtaaccaa cgaatccgct tcatccaaaa 2876
 tcaaccattc taacgcacat actcaaatat agcagctgca cccataccga caccaataca 2936
 catcgtaacc atgccgtaac ggctatcggg acgtctaccc atttcattaa gtaaacgcgc 2996
 ggtaacatt gctcctgtag cacctaattg atgacctaaa gcaata 3042

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Leu Phe Thr Trp Asp Asn Lys Ala Asp Ala Ile Val Thr Lys Asp Tyr
 20 25 30

Ser Lys Glu Ser Arg Val Asn Glu Asn Ser Lys Tyr Gly Thr Leu Ile
 35 40 45

Ser Asp Trp Tyr Leu Lys Gly Arg Leu Thr Ser Leu Glu Ser Gln Phe
 50 55 60

Ile Asn Ala Leu Asp Ile Leu Glu Thr Tyr His Tyr Gly Glu Lys Glu
 65 70 75 80

Tyr Lys Asp Ala Lys Asp Lys Leu Met Thr Arg Ile Leu Gly Glu Asp
 85 90 95

Gln Tyr Leu Leu Glu Arg Lys Lys Val Gln Tyr Glu Glu Tyr Lys Lys
 100 105 110

Leu Tyr Gln Lys Tyr Lys Glu Glu Asn Pro Thr Ser Lys Gly Leu Lys
 115 120 125

Leu Lys Thr Phe Asp Gln Tyr Thr Ile Glu Asp Leu Thr Met Arg Glu
 130 135 140

Tyr Asn Glu Leu Thr Glu Ser Leu Lys Ser Ala Val Lys Asp Phe Glu
 145 150 155 160

Lys Asp Val Glu Lys Ile Glu Asn Gln His His Asp Leu Lys Pro Phe
 165 170 175

Thr Asp Glu Met Glu Glu Lys Ala Thr Ser Arg Val Asp Asp Leu Ala
 180 185 190

Asn Lys Ala Tyr Ser Val Tyr Phe Ala Phe Val Arg Asp Thr Gln His
 195 200 205

Lys Thr Glu Ala Leu Glu Leu Lys Ala Lys Val Asp Leu Val Leu Gly
 210 215 220

Asp Glu Asp Lys Pro His Arg Ile Ser Asn Glu Arg Ile Glu Lys Glu
 225 230 235 240

Met Ile Lys Asp Leu Glu Ser Ile Ile Glu Asp Phe Phe Ile Glu Thr
 245 250 255

Gly Leu Asn Lys Pro Gly Asn Ile Thr Ser Tyr Asp Ser Ser Lys His
 260 265 270

His Tyr Lys Asn His Ser Glu Gly Phe Glu Ala Leu Val Lys Glu Thr
 275 280 285

Arg Glu Ala Val Ala Asn Ala Asp Glu Ser Trp Lys Thr Lys Thr Val
 290 295 300

Lys Lys Tyr Gly Glu Ser Glu Thr Lys Ser Pro Val Val Lys Glu Glu
 305 310 315 320

Asn Lys Val Glu Asp Pro Gln Ser Pro Lys Phe Asp Asn Gln Gln Glu
 325 330 335

Val Lys Thr Thr Ala Gly Lys Ala Glu Glu Thr Thr Gln Pro Val Ala
 340 345 350

Gln Pro Leu Val Lys Ile Pro Gln Gly Thr Ile Thr Gly Glu Ile Val
 355 360 365

Lys Gly Pro Glu Tyr Pro Thr Met Glu Asn Lys Thr Leu Gln Gly Glu
 370 375 380

Ile Val Gln Gly Pro Asp Phe Pro Thr Met Glu Gln Ser Gly Pro Ser
385 390 395 400

Leu Ser Asp Asn Tyr Thr Gln Pro Thr Thr Pro Asn Pro Ile Leu Glu
405 410 415

Gly Leu Glu Gly Ser Ser Ser Lys Leu Glu Ile Lys Pro Gln Gly Thr
420 425 430

Glu Ser Thr Leu Lys Gly Ile Gln Gly Glu Ser Ser Asp Ile Glu Val
435 440 445

Lys Pro Gln Ala Thr Glu Thr Thr Glu Ala Ser Gln Tyr Gly Pro Arg
450 455 460

Pro Gln Phe Asn Lys Thr Pro Lys Tyr Val Lys Tyr Arg Asp Ala Gly
465 470 475 480

Thr Gly Ile Arg Glu Tyr Asn Asp Gly Thr Phe Gly Tyr Glu Ala Arg
485 490 495

Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr
500 505 510

Asn Gln Asp Gly Thr Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys
515 520 525

Ala Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln
530 535 540

Val Ser Tyr Gly Ala Arg Pro Thr Gln Lys Lys Pro Ser Glu Thr Asn
545 550 555 560

Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala
565 570 575

Arg Pro Thr Tyr Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr
580 585 590

Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Lys
595 600 605

Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly
610 615 620

Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr
625 630 635 640

Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly
645 650 655

Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val
660 665 670

Thr Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr
675 680 685

Asn Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asp
690 695 700

Gly Thr Ala Thr Tyr Gly Pro Arg Val Thr Lys
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aagcaaggct atctaataaa agaacggctc aactgaagat gaaagaaaaa ttttaattca 180
tatgaatgac ggcgagcaag accatgctga acaattatta gctcaagtga atcaattatt 240
ggcagataaa aatcattttac atcttggtttt tgaataatat ctctattacg caagtgtgct 300
gtatttctaaa gtgccattgt gttttctatt ttttaataaa acctcagcac attatgaaca 360
actttctatt ttctatatct cttaaaacca tttccgaaat taaacctcag cacattcaaa 420
attccattttt attcttaaaa atatttttta actcatatgt aataaaccgc tttcattata 480
aaaaatatct atatatttta tctgttttta ttaatcggaa tagcgtgatt ttgcggtttt 540
aagcctttta ctctctgaat aaatctttgg acaaaatttt tattttataa gttgtaaaac 600
ttacctttta atttaattat aaatatagat tttagtattg caatacataa ttcgttatat 660
tatgatgact ttacaaatac atacagggggg tattaat ttg aaa aag aaa aac att 715
Leu Lys Lys Lys Asn Ile
1 5
tat tca att cgt aaa cta ggt gta ggt att gca tct gta act tta ggt 763
Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly
10 15 20
aca tta ctt ata tct ggt ggc gta aca cct gct gca aat gct gcg caa 811
Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln

25	30	35	
cac gat gaa gct caa caa aat gct ttt tat caa gtg tta aat atg cct His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro 40 45 50			859
aac tta aac gct gat caa cgt aat ggt ttt atc caa agc ctt aaa gat Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp 55 60 65 70			907
gat cca agc caa agt gct aac gtt tta ggt gaa gct caa aaa ctt aat Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn 75 80 85			955
gac tct caa gct cca aaa gct gat gcg caa caa aat aag ttc aac aaa Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Lys Phe Asn Lys 90 95 100			1003
gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta aac Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn 105 110 115			1051
gaa gag caa cgc aat ggt ttc att caa agt ctt aaa gac gat cca agc Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser 120 125 130			1099
caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct caa Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln 135 140 145 150			1147
gca ccg aaa gct gac aac aat ttc aac aaa gaa caa caa aat gct ttc Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe 155 160 165			1195
tat gaa atc ttg aac atg cct aac ttg aac gaa gaa caa cgc aat ggt Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly 170 175 180			1243
ttc atc caa agc tta aaa gat gac cca agt caa agt gct aac ctt tta Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu 185 190 195			1291
gca gaa gct aaa aag tta aat gaa tct caa gca ccg aaa gct gat aac Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn 200 205 210			1339
aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa atc tta cat tta Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu 215 220 225 230			1387
cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys 235 240 245			1435
gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta Asp Asp Pro Ser Gln Ser Ala Asn Leu Ala Glu Ala Lys Lys Leu 250 255 260			1483
aat gat gca caa gca cca aaa gct gac aac aaa ttc aac aaa gaa caa Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln 265 270 275 280			1531

265	270	275	
caa aat gct ttc tat gaa att tta cat tta cct aac tta act gaa gaa Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu 280 285 290			1579
caa cgt aac ggc ttc atc caa agc ctt aaa gac gat cct tca gtg agc Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser 295 300 305 310			1627
aaa gaa att tta gca gaa gct aaa aag cta aac gat gct caa gca cca Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro 315 320 325			1675
aaa gag gaa gac aac aac aag cct ggt aaa gaa gac ggc aac aaa cct Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 330 335 340			1723
ggt aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 345 350 355			1771
ggc aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 360 365 370			1819
ggc aaa gaa gat ggc aac aaa cct ggt aaa gaa gac ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 375 380 385 390			1867
ggt aaa gaa gat ggc aac aag cct ggt aaa gaa gat ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 395 400 405			1915
ggt aaa gaa gac ggc aac gga gta cat gtc gtt aaa cct ggt gat aca Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr 410 415 420			1963
gta aat gac att gca aaa gca aac ggc act act gct gac aaa att gct Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala 425 430 435			2011
gca gat aac aaa tta gct gat aaa aac atg atc aaa cct ggt caa gaa Ala Asp Asn Lys Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu 440 445 450			2059
ctt gtt gtt gat aag aag caa cca gca aac cat gca gat gct aac aaa Leu Val Val Asp Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys 455 460 465 470			2107
gct caa gca tta cca gaa act ggt gaa gaa aat cca ttc atc ggt aca Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr 475 480 485			2155
act gta ttt ggt gga tta tca tta gcg tta ggt gca gcg tta tta gct Thr Val Phe Gly Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala 490 495 500			2203
gga cgt cgt cgc gaa cta taa aaacaaacaa tacacaacga tagatatc Gly Arg Arg Arg Glu Leu			2252

505

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Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
 20 25 30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
 35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
 50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
 65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
 85 90 95

Gln Asn Lys Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
 100 105 110

Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
 180 185 190

Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
 225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
 245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
 260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
 275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
 290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
 305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
 325 330 335

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 340 345 350

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 355 360 365

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 370 375 380

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 385 390 395 400

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
 405 410 415

Val Lys Pro Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
 420 425 430

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
 435 440 445

Ile Lys Pro Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn
 450 455 460

His Ala Asp Ala Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu
465 470 475 480

Asn Pro Phe Ile Gly Thr Thr Val Phe Gly Gly Leu Ser Leu Ala Leu
485 490 495

Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg Glu Leu
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Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
20 25 30
ccg agc tcg aga gga tcc aaa gct gat gcg caa caa aat aac ttc aac 144
Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn
35 40 45
aaa gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta 192
Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
50 55 60
aac gaa gcg caa cgc aac ggc ttc att caa agt ctt aaa gac gac cca 240
Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
65 70 75 80
agc caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct 288
Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser
85 90 95
caa gca ggg aaa cta gtt tag aaa gct tgatccggc 324
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Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
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Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
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Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val	
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Ile Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg
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Val Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile
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Phe Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr
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Gly Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu
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 Met Arg Leu Pro
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 Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala Cys Asn Gln Asp
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 Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val
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 105 110 115
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 Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly
 120 125 130
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Lys	Ser	Cys	Gln	Gln	Gln	Asn	Ala	Glu	Leu	Leu	Ser	Ile	Thr	Glu	Ile	
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			905					910						915			
cca	aac	gcc	ttc	att	tgc	cag	cga	cat	aac	agt	agt	atc	aat	gct	acc	2899	
Pro	Asn	Ala	Phe	Ile	Cys	Gln	Arg	His	Asn	Ser	Ser	Ile	Asn	Ala	Thr		
			920					925					930				
aca	gtt	atg	cct	acc	atg	ccc	tgc	gtc	cca	tca	ggg	tgc	aag	gaa	ggt	2947	
Thr	Val	Met	Pro	Thr	Met	Pro	Ser	Val	Pro	Ser	Gly	Cys	Lys	Glu	Gly		
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tgg	aat	ttc	tac	agc	aac	aag	tgt	ttc	aaa	atc	ttt	gga	ttt	atg	gaa	2995	
Trp	Asn	Phe	Tyr	Ser	Asn	Lys	Cys	Phe	Lys	Ile	Phe	Gly	Phe	Met	Glu		
	950					955					960						
gaa	gaa	aga	aaa	aat	tgg	caa	gag	gca	cga	aaa	gct	tgt	ata	ggc	ttt	3043	
Glu	Glu	Arg	Lys	Asn	Trp	Gln	Glu	Ala	Arg	Lys	Ala	Cys	Ile	Gly	Phe		
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gga	ggg	aat	ctg	gtc	tcc	ata	caa	aat	gaa	aaa	gag	caa	gca	ttt	ctt	3091	
Gly	Gly	Asn	Leu	Val	Ser	Ile	Gln	Asn	Glu	Lys	Glu	Gln	Ala	Phe	Leu		
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acc	tat	cac	atg	aag	gac	tcc	act	ttc	agt	gcc	tgg	act	ggg	ctg		3136	
Thr	Tyr	His	Met	Lys	Asp	Ser	Thr	Phe	Ser	Ala	Trp	Thr	Gly	Leu			
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aat	gat	gtc	aat	tca	gaa	cac	acg	ttc	ctt	tgg	acg	gat	gga	cga		3181	
Asn	Asp	Val	Asn	Ser	Glu	His	Thr	Phe	Leu	Trp	Thr	Asp	Gly	Arg			
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Gly	Val	His	Tyr	Thr	Asn	Trp	Gly	Lys	Gly	Tyr	Pro	Gly	Gly	Arg			
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Arg	Ser	Ser	Leu	Ser	Tyr	Glu	Asp	Ala	Asp	Cys	Val	Val	Ile	Ile			
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gac	agt	aaa	cga	ggc	tac	ata	tgc	cag	aca	cga	tcc	gac	cct	tcc		3361	
Asp	Ser	Lys	Arg	Gly	Tyr	Ile	Cys	Gln	Thr	Arg	Ser	Asp	Pro	Ser			
			1075					1080					1085				
ttg	act	aat	cct	cca	gca	acg	att	caa	aca	gat	ggc	ttt	ggt	aaa		3406	

Leu Thr Asn Pro	Pro Ala Thr Ile Gln	Thr Asp Gly Phe Val Lys	
1090	1095	1100	
tat ggc aaa agc	agc tat tca ctc atg	aga caa aaa ttt caa tgg	3451
Tyr Gly Lys Ser	Ser Tyr Ser Leu Met	Arg Gln Lys Phe Gln Trp	
1105	1110	1115	
cat gaa gcg gag	aca tac tgc aag ctt	cac aat tcc ctt ata gcc	3496
His Glu Ala Glu	Thr Tyr Cys Lys Leu	His Asn Ser Leu Ile Ala	
1120	1125	1130	
agc att ctg gat	ccc tac agt aat gca	ttt gcg tgg ctg cag atg	3541
Ser Ile Leu Asp	Pro Tyr Ser Asn Ala	Phe Ala Trp Leu Gln Met	
1135	1140	1145	
gaa aca tct aat	gaa cgt gtg tgg atc	gcc ctg aac agt aac ttg	3586
Glu Thr Ser Asn	Glu Arg Val Trp Ile	Ala Leu Asn Ser Asn Leu	
1150	1155	1160	
act gat aat caa	tac act tgg act gat	aag tgg agg gtg agg tac	3631
Thr Asp Asn Gln	Tyr Thr Trp Thr Asp	Lys Trp Arg Val Arg Tyr	
1165	1170	1175	
act aac tgg gct	gct gat gag ccc aaa	ttg aaa tca gca tgt gtt	3676
Thr Asn Trp Ala	Ala Asp Glu Pro Lys	Leu Lys Ser Ala Cys Val	
1180	1185	1190	
tat ctg gat ctt	gat ggc tac tgg aag	aca gca cat tgc aat gaa	3721
Tyr Leu Asp Leu	Asp Gly Tyr Trp Lys	Thr Ala His Cys Asn Glu	
1195	1200	1205	
agt ttt tac ttt	ctc tgt aaa aga tca	gat gaa atc cct gct act	3766
Ser Phe Tyr Phe	Leu Cys Lys Arg Ser	Asp Glu Ile Pro Ala Thr	
1210	1215	1220	
gaa ccc cca caa	ctg cct ggc aga tgc	ccg gag tca gat cac aca	3811
Glu Pro Pro Gln	Leu Pro Gly Arg Cys	Pro Glu Ser Asp His Thr	
1225	1230	1235	
gca tgg att cct	ttc cat ggt cac tgt	tac tat att gag tcc tca	3856
Ala Trp Ile Pro	Phe His Gly His Cys	Tyr Tyr Ile Glu Ser Ser	
1240	1245	1250	
tat aca aga aac	tgg ggc caa gct tct	ctg gaa tgt ctt cga atg	3901
Tyr Thr Arg Asn	Trp Gly Gln Ala Ser	Leu Glu Cys Leu Arg Met	
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Gly Ser Ser Leu	Val Ser Ile Glu Ser	Ala Ala Glu Ser Ser Phe	
1270	1275	1280	
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Leu Ser Tyr Arg	Val Glu Pro Leu Lys	Ser Lys Thr Asn Phe Trp	
1285	1290	1295	
ata gga ttg ttc	aga aat gtt gaa ggg	acg tgg ctg tgg ata aat	4036
Ile Gly Leu Phe	Arg Asn Val Glu Gly	Thr Trp Leu Trp Ile Asn	
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aac agt ccg gtc	tcc ttt gtc aac tgg	aac aca gga gat ccc tct	4081

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Gly Glu Arg Asn	Asp Cys Val Ala Leu	His Ala Ser Ser Gly Phe	
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tgg agt aat att	cac tgt tct tcc tac	aaa gga tat att tgt aaa	4171
Trp Ser Asn Ile	His Cys Ser Ser Tyr	Lys Gly Tyr Ile Cys Lys	
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aga cca aaa att	att gat gct aaa cct	act cat gaa tta ctt aca	4216
Arg Pro Lys Ile	Ile Asp Ala Lys Pro	Thr His Glu Leu Leu Thr	
1360	1365	1370	
aca aaa gct gac	aca agg aag atg gac	cct tct aaa ccg tct tcc	4261
Thr Lys Ala Asp	Thr Arg Lys Met Asp	Pro Ser Lys Pro Ser	
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aac gtg gcc gga	gta gtc atc att gtg	atc ctc ctg att tta acg	4306
Asn Val Ala Gly	Val Val Ile Ile Val	Ile Leu Leu Ile Leu Thr	
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ggg gct ggc ctt	gcc gcc tat ttc ttt	tat aag aaa aga cgt gtg	4351
Gly Ala Gly Leu	Ala Ala Tyr Phe Phe	Tyr Lys Lys Arg Arg Val	
1405	1410	1415	
cac cta cct caa	gag ggc gcc ttt gaa	aac act ctg tat ttt aac	4396
His Leu Pro Gln	Glu Gly Ala Phe Glu	Asn Thr Leu Tyr Phe Asn	
1420	1425	1430	
agt cag tca agc	cca gga act agt gat	atg aaa gat ctc gtg ggc	4441
Ser Gln Ser Ser	Pro Gly Thr Ser Asp	Met Lys Asp Leu Val Gly	
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aat att gaa cag	aat gaa cac tcg gtc	atc tag tacctcaatg	4484
Asn Ile Glu Gln	Asn Glu His Ser Val	Ile	
1450	1455		
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taacaatgct gattactacc	ttttaaaata ttttagataa	atgcacagca ccacagcacc	4724
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5185

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20 25 30Lys Arg Cys Val Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala
35 40 45Cys Asn Gln Asp Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser
50 55 60Gln Ile Met Ser Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys
65 70 75 80Thr Asp Trp Val Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu
85 90 95Phe Gln Lys Trp Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly
100 105 110Glu Asp Leu Phe Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met
115 120 125Leu Tyr Lys Gly Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr
130 135 140Thr Asp Asn Leu Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu
145 150 155 160Gly Asn Ala Asn Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn
165 170 175Lys Trp Tyr Ala Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu
180 185 190Trp Cys Gly Thr Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr
195 200 205Cys Pro Leu Lys Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro
210 215 220

Leu Thr Ser Val Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp
225 230 235 240

His Gln Ala Arg Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser
245 250 255

Ile Thr Glu Ile His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser
260 265 270

Leu Thr Ser Gly Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser
275 280 285

Gly Trp Gln Trp Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu
290 295 300

Pro Gly Ser Pro Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn
305 310 315 320

Pro Gly Lys Asn Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu
325 330 335

Gly Tyr Ile Cys Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile
340 345 350

Pro Ser Glu Ser Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro
355 360 365

Tyr Ala Gly His Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln
370 375 380

Arg Asp Ala Leu Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser
385 390 395 400

Ile His Thr Ile Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr
405 410 415

Glu Pro Asn Asp Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln
420 425 430

Met Tyr Phe Glu Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp
435 440 445

Leu Arg Gly Glu Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val
450 455 460

Val Met Lys Gly Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp
465 470 475 480

Pro Leu Gly Tyr Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu
485 490 495

Ile Val Glu Val Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His
500 505 510

Phe Tyr Cys Tyr Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala
515 520 525

Asn Gln Thr Cys Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp
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Arg Tyr Glu Gln Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu
545 550 555 560

Lys Tyr Phe Trp Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe
565 570 575

Gln Trp Thr Ile Glu Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp
580 585 590

Met Pro Gly Arg Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala
595 600 605

Gly Gly Leu Trp Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val
610 615 620

Cys Lys His Trp Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr
625 630 635 640

Thr Pro Glu Pro Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr
645 650 655

Ser Leu Cys Phe Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr
660 665 670

Trp Phe Glu Ser Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala
675 680 685

Ser Ile Asn Asn Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr
690 695 700

Ala Ser Gly Ser Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly
705 710 715 720

Ser Pro Ser Glu Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr
725 730 735

Glu Asn Trp Ala Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr
740 745 750

Cys Gly Glu Leu Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn
755 760 765

Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr
770 775 780

Pro Lys Pro Glu Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr
785 790 795 800

Glu Asp Gly Trp Val Ile Tyr Lys Asp Tyr Gln Tyr Tyr Phe Ser Lys
805 810 815

Glu Lys Glu Thr Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe
820 825 830

Gly Asp Leu Val Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp
835 840 845

Lys Tyr Val Asn Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu
850 855 860

Leu Ile Ser Leu Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val
865 870 875 880

Asp Tyr Val Ser Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp
885 890 895

Glu Asn Cys Val Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile
900 905 910

Asn Cys Gly Tyr Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser
915 920 925

Ile Asn Ala Thr Thr Val Met Pro Thr Met Pro Ser Val Pro Ser Gly
930 935 940

Cys Lys Glu Gly Trp Asn Phe Tyr Ser Asn Lys Cys Phe Lys Ile Phe
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Gly Phe Met Glu Glu Glu Arg Lys Asn Trp Gln Glu Ala Arg Lys Ala
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Cys Ile Gly Phe Gly Gly Asn Leu Val Ser Ile Gln Asn Glu Lys Glu
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Gln Ala Phe Leu Thr Tyr His Met Lys Asp Ser Thr Phe Ser Ala Trp
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Thr Gly Leu Asn Asp Val Asn Ser Glu His Thr Phe Leu Trp Thr
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Asp Gly Arg Gly Val His Tyr Thr Asn Trp Gly Lys Gly Tyr Pro
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Val Ile Ile Gly Gly Ala Ser Asn Glu Ala Gly Lys Trp Met Asp
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Asp Pro Ser Leu Thr Asn Pro Pro Ala Thr Ile Gln Thr Asp Gly
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Phe Val Lys Tyr Gly Lys Ser Ser Tyr Ser Leu Met Arg Gln Lys
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Phe Gln Trp His Glu Ala Glu Thr Tyr Cys Lys Leu His Asn Ser
 1115 1120 1125

Leu Ile Ala Ser Ile Leu Asp Pro Tyr Ser Asn Ala Phe Ala Trp
 1130 1135 1140

Leu Gln Met Glu Thr Ser Asn Glu Arg Val Trp Ile Ala Leu Asn
 1145 1150 1155

Ser Asn Leu Thr Asp Asn Gln Tyr Thr Trp Thr Asp Lys Trp Arg
 1160 1165 1170

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Ala	Cys	Val	Tyr	Leu	Asp	Leu	Asp	Gly	Tyr	Trp	Lys	Thr	Ala	His
1190						1195					1200			
Cys	Asn	Glu	Ser	Phe	Tyr	Phe	Leu	Cys	Lys	Arg	Ser	Asp	Glu	Ile
1205						1210					1215			
Pro	Ala	Thr	Glu	Pro	Pro	Gln	Leu	Pro	Gly	Arg	Cys	Pro	Glu	Ser
1220						1225					1230			
Asp	His	Thr	Ala	Trp	Ile	Pro	Phe	His	Gly	His	Cys	Tyr	Tyr	Ile
1235						1240					1245			
Glu	Ser	Ser	Tyr	Thr	Arg	Asn	Trp	Gly	Gln	Ala	Ser	Leu	Glu	Cys
1250						1255					1260			
Leu	Arg	Met	Gly	Ser	Ser	Leu	Val	Ser	Ile	Glu	Ser	Ala	Ala	Glu
1265						1270					1275			
Ser	Ser	Phe	Leu	Ser	Tyr	Arg	Val	Glu	Pro	Leu	Lys	Ser	Lys	Thr
1280						1285					1290			
Asn	Phe	Trp	Ile	Gly	Leu	Phe	Arg	Asn	Val	Glu	Gly	Thr	Trp	Leu
1295						1300					1305			
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1310						1315					1320			
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1325						1330					1335			
Ser	Gly	Phe	Trp	Ser	Asn	Ile	His	Cys	Ser	Ser	Tyr	Lys	Gly	Tyr
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Ile	Cys	Lys	Arg	Pro	Lys	Ile	Ile	Asp	Ala	Lys	Pro	Thr	His	Glu
1355						1360					1365			
Leu	Leu	Thr	Thr	Lys	Ala	Asp	Thr	Arg	Lys	Met	Asp	Pro	Ser	Lys
1370						1375					1380			
Pro	Ser	Ser	Asn	Val	Ala	Gly	Val	Val	Ile	Ile	Val	Ile	Leu	Leu
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Ile Leu Thr Gly Ala Gly Leu Ala Ala Tyr Phe Phe Tyr Lys Lys
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Arg Arg Val His Leu Pro Gln Glu Gly Ala Phe Glu Asn Thr Leu
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 Pro Trp Asn Glu Pro Pro Val Ile Leu Ser Met Val Ile Leu Ser Leu
 20 25 30
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 Thr Phe Leu Leu Gly Leu Pro Gly Asn Gly Leu Val Leu Trp Val Ala

35	40	45	
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cac ttg gct ctc cag gga cag tgg ccc tac ggc agg ttc cta tgc aag His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys 85 90 95			288
ctc atc ccc tcc atc att gtc ctc aac atg ttt gcc agt gtc ttc ctg Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu 100 105 110			336
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gat agg tta gat cct tcc tct ttc caa aca aat gat cat cct tgg aca Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr 210 215 220			672
gtc ccc act gtc ttc caa cct caa aca ttt caa aga cct tct gca gat Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp 225 230 235 240			720
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275	280	285	
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Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser			
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Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu Leu Ile Met	
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Phe Ile Ile Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu
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Ile Val Ile Tyr Ala Tyr Ile Thr Lys Ile Ser Asp Ser Ile Phe Val
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Ile Phe Pro Ser Phe Phe Val Val Tyr Val Thr Ile Ser Ile Leu Phe
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Ser Tyr Ile Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu
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Ser Thr Lys Gly Glu Gly Arg Gly Leu Gly Leu Ser Thr Leu Lys Glu
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Asp Ile Asn Gly Ile Lys Leu Gly Ser Glu Ile Arg Lys His Asp Pro
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Val Gly Asn Ile Ile Phe Val Thr Ser His Ser Glu Leu Thr Tyr Leu
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Thr Phe Val Tyr Lys Val Ala Ala Met Asp Phe Ile Phe Lys Asp Asp
100 105 110

Pro Ala Glu Leu Arg Thr Arg Ile Ile Asp Cys Leu Glu Thr Ala His
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Leu Lys Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met
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Phe Phe Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp
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Ser	Gly	Arg	Asn	Asp	Val	Ser	Glu	Leu	Met	Ala	Ala	Ala	Asp	Leu	Leu		
			605					610					615				
ctg	cat	ccc	gct	tat	cag	gaa	gcc	gcg	ggt	atc	gtt	ctt	cta	gaa	gcg	2344	
Leu	His	Pro	Ala	Tyr	Gln	Glu	Ala	Ala	Gly	Ile	Val	Leu	Leu	Glu	Ala		
		620					625					630					
atc	act	gct	ggg	tta	cct	gtt	tta	aca	aca	gcg	gta	tgt	ggg	tac	gcg	2392	
Ile	Thr	Ala	Gly	Leu	Pro	Val	Leu	Thr	Thr	Ala	Val	Cys	Gly	Tyr	Ala		
	635					640					645						
cat	tat	att	gcg	gat	gcc	aat	tgt	gga	acg	gtc	atc	gct	gaa	cct	ttc	2440	
His	Tyr	Ile	Ala	Asp	Ala	Asn	Cys	Gly	Thr	Val	Ile	Ala	Glu	Pro	Phe		
650					655					660					665		
tct	cag	gaa	caa	tta	aat	gaa	gtt	tta	cgt	aaa	gcg	tta	act	cag	tcg	2488	
Ser	Gln	Glu	Gln	Leu	Asn	Glu	Val	Leu	Arg	Lys	Ala	Leu	Thr	Gln	Ser		
				670					675					680			
cca	ttg	cga	atg	gcc	tgg	gcg	gag	aat	gct	cgc	cat	tat	gcc	gat	act	2536	
Pro	Leu	Arg	Met	Ala	Trp	Ala	Glu	Asn	Ala	Arg	His	Tyr	Ala	Asp	Thr		
			685					690					695				
cag	gat	ttg	tat	agc	ttg	cca	gaa	aaa	gcc	gcg	gat	atc	att	aca	ggt	2584	

Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr Gly	
700 705 710	
ggt tta g atg gtt gaa tta aaa gag ccg ctt gcc aca ctt tgg cgt ggt	2633
Gly Leu Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly	
715 720 725	
aaa gat gct ttt gca gag gtc aaa aaa ctg aac ggc gag gtc ttt cgt	2681
Lys Asp Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg	
730 735 740 745	
gaa ctg gag act cgt cgt aca tta cgc ttt gaa ctg tcc ggg aaa agc	2729
Glu Leu Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser	
750 755 760	
tat ttt ctt aaa tgg cac aag ggg acg aca tta aaa gag att ata aaa	2777
Tyr Phe Leu Lys Trp His Lys Gly Thr Leu Lys Glu Ile Ile Lys	
765 770 775	
aat cta ctc tca ttg cgg atg ccc gtt ttg ggc gca gac aga gag tgg	2825
Asn Leu Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp	
780 785 790	
cac gct att cat cgc ctg agt gat gtt ggc gtt gat aca atg aag ggc	2873
His Ala Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly	
795 800 805	
att ggg ttt ggc gaa aaa ggg tta aat cca tta act cgc gca tca ttt	2921
Ile Gly Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe	
810 815 820 825	
att att acc gaa gat ctc act ccc aca att agc ctt gaa gat tat tgt	2969
Ile Ile Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys	
830 835 840	
gcc gat tgg gca gtc aac ccg cct gat ata cgt gtt aag cgt atg ctg	3017
Ala Asp Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu	
845 850 855	
atc gca cgt gta gca act atg gtg cgt aaa atg cat act gca ggg ata	3065
Ile Ala Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile	
860 865 870	
aat cac cgc gac tgt tac att tgc cac ttt ttg ctt cat ttg cca ttt	3113
Asn His Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe	
875 880 885	
act ggc cgg gaa gat gaa tta aaa att tca gtt atc gat ctg cat cgg	3161
Thr Gly Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg	
890 895 900 905	
gca cag ata cgt gca aaa gta ccg cgc cgc tgg cgc gat aaa gac ctg	3209
Ala Gln Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu	
910 915 920	
att ggt tta tat ttc tca tca atg aat att ggc ctg acg caa aga gat	3257
Ile Gly Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp	
925 930 935	
atc tgg cga ttt atg aag gtt tat ttt ggg atg cct tta cgc aaa ata	3305

Ile Trp Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile	
940 945 950	
ttg tct ctt gaa cag aat tta ttg aac atg gca agc gtt aag gcc gag	3353
Leu Ser Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu	
955 960 965	
cgt att aaa gag cga aca caa cgc aaa gga tta taaaaatatt tattagtatg	3406
Arg Ile Lys Glu Arg Thr Gln Arg Lys Gly Leu	
970 975 980	
tactggaact aacttttatt atg act att tat ttt ata aat tgg gtt gca gat	3458
Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp	
985 990	
tat gaa tta aaa atg att cag tac ctg aaa aaa aag tac aag ata aaa	3506
Tyr Glu Leu Lys Met Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys	
995 1000 1005	
aat ata aca aca cca aaa aaa tat aac tgg att aat aaa aaa ata	3551
Asn Ile Thr Thr Pro Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile	
1010 1015 1020	
tca aaa ata ggg atg gat aat gca tgg ctg ggg cga tta ttc atc	3596
Ser Lys Ile Gly Met Asp Asn Ala Trp Leu Gly Arg Leu Phe Ile	
1025 1030 1035	
aag cat tac ctc aat gat att aaa aaa gat gac ata att atc att	3641
Lys His Tyr Leu Asn Asp Ile Lys Lys Asp Asp Ile Ile Ile Ile	
1040 1045 1050	
aat gac agt gtt gtt aat aaa ggt atc aat aaa caa ata tta aaa	3686
Asn Asp Ser Val Val Asn Lys Gly Ile Asn Lys Gln Ile Leu Lys	
1055 1060 1065	
aat att aac tgt cat aaa gtt ttg ctt cta aga aat act gtt ggc	3731
Asn Ile Asn Cys His Lys Val Leu Leu Leu Arg Asn Thr Val Gly	
1070 1075 1080	
gaa gat ttt att ctt gat aac gcg aat tat ttc gat att ata tat	3776
Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr Phe Asp Ile Ile Tyr	
1085 1090 1095	
gat ttt gag cat aga ttt ata ggg aat gaa aag atc aag gca ata	3821
Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys Ile Lys Ala Ile	
1100 1105 1110	
gaa caa ttt ttt cct ata gga atg gat gaa att aga aat tat agt	3866
Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg Asn Tyr Ser	
1115 1120 1125	
tta tct gac aaa aat aac agc cag cca ata tgt ttt ttc ctt ggt	3911
Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe Leu Gly	
1130 1135 1140	
cgt gat aaa ggg cgt ctt caa ata att aat gag tta gcc gag aga	3956
Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu Arg	
1145 1150 1155	
tta aca aca cta gga tgt aag cta gat ttt aat gtt gtc aaa gat	4001

Leu Thr Thr	Leu Gly Cys Lys	Leu Asp Phe Asn Val	Val Lys Asp	
1160		1165	1170	
aag aca tca	tct acg act tca	aag tat ttg att gaa	aaa caa ata	4046
Lys Thr Ser	Ser Thr Thr Ser	Lys Tyr Leu Ile Glu	Lys Gln Ile	
1175		1180	1185	
tct tat gaa	gag aat att aga	aga aca tta aat gct	aat ata att	4091
Ser Tyr Glu	Glu Asn Ile Arg	Arg Thr Leu Asn Ala	Asn Ile Ile	
1190		1195	1200	
gtt gat ata	acc aaa gaa aac	caa tct ggc tgg act	ctt cgt ata	4136
Val Asp Ile	Thr Lys Glu Asn	Gln Ser Gly Trp Thr	Leu Arg Ile	
1205		1210	1215	
ctt gag gca	cta ttt ttc aat	aaa aaa tta att act	aat aat ata	4181
Leu Glu Ala	Leu Phe Phe Asn	Lys Lys Leu Ile Thr	Asn Asn Ile	
1220		1225	1230	
aat gta ttt	ggg tca gaa atc	tat agt gaa tct cgc	ttt ttt ata	4226
Asn Val Phe	Gly Ser Glu Ile	Tyr Ser Glu Ser Arg	Phe Phe Ile	
1235		1240	1245	
ata ggt cat	gat gat tgg gat	aag tta gag tat ttt	att aac tca	4271
Ile Gly His	Asp Asp Trp Asp	Lys Leu Glu Tyr Phe	Ile Asn Ser	
1250		1255	1260	
tct gtt aaa	cca atg gat tat	gat agt tta tat aaa	ttc agt cca	4316
Ser Val Lys	Pro Met Asp Tyr	Asp Ser Leu Tyr Lys	Phe Ser Pro	
1265		1270	1275	
gat aaa atg	atg tca acg att	gtt tct gat ttt ata	gac aaa taa	4361
Asp Lys Met	Met Ser Thr Ile	Val Ser Asp Phe Ile	Asp Lys	
1280		1285	1290	
aaccgttaaaa	aca gtg agt ttt act	caa tta atg aga gtt	tct atg aaa	4410
	Val Ser Phe Thr	Gln Leu Met Arg Val	Ser Met Lys	
	1295	1300		
ata gcg ttt	atc ggc gaa gct	gtt tct gga ttt ggc	ggc atg gaa	4455
Ile Ala Phe	Ile Gly Glu Ala	Val Ser Gly Phe Gly	Gly Met Glu	
1305		1310	1315	
act gtc atc	cgt gat gtt att	act acc ttc agg	caa caa cat atc	4500
Thr Val Ile	Arg Asp Val Ile	Thr Thr Phe Arg	Gln Gln His Ile	
1320		1325	1330	
caa agt gaa	atg ttt ttc ttt	tgt cgt aat gac	aaa atg gat aag	4545
Gln Ser Glu	Met Phe Phe Phe	Cys Arg Asn Asp	Lys Met Asp Lys	
1335		1340	1345	
gga tgg ctg	gaa ggt att aaa	tac tca tgt tca ttt	tcc aat att	4590
Gly Trp Leu	Glu Gly Ile Lys	Tyr Ser Cys Ser Phe	Ser Asn Ile	
1350		1355	1360	
cgt tta ggt	ttt ttg cgt cgg	gcg aaa cat att	cat gct cta agt	4635
Arg Leu Gly	Phe Leu Arg Arg	Ala Lys His Ile His	Ala Leu Ser	
1365		1370	1375	
aaa tgg ctt	cag gag tac caa	cca gat atc gtt att	tgt att gat	4680

Lys	Trp	Leu	Gln	Glu	Tyr	Gln	Pro	Asp	Ile	Val	Ile	Cys	Ile	Asp	
1380						1385					1390				
gtg	atc	tcc	tgc	ctg	ttt	gcc	gca	aaa	gca	cgt	aaa	aaa	tca	gga	4725
Val	Ile	Ser	Cys	Leu	Phe	Ala	Ala	Lys	Ala	Arg	Lys	Lys	Ser	Gly	
1395						1400					1405				
att	gat	atg	cca	gta	ttt	tca	tgg	cca	cat	ttt	tct	tta	gat	cac	4770
Ile	Asp	Met	Pro	Val	Phe	Ser	Trp	Pro	His	Phe	Ser	Leu	Asp	His	
1410						1415					1420				
aaa	aaa	cat	gct	gaa	tat	atc	acc	tgt	gcc	gac	tat	cat	tta	gca	4815
Lys	Lys	His	Ala	Glu	Tyr	Ile	Thr	Cys	Ala	Asp	Tyr	His	Leu	Ala	
1425						1430					1435				
atc	agc	tct	ggc	att	aaa	cag	caa	atg	att	aat	cga	ggg	gta	gca	4860
Ile	Ser	Ser	Gly	Ile	Lys	Gln	Gln	Met	Ile	Asn	Arg	Gly	Val	Ala	
1440						1445					1450				
gaa	tcg	acg	ata	aat	gtt	att	ttt	aat	ccc	gtc	gaa	act	aaa	gac	4905
Glu	Ser	Thr	Ile	Asn	Val	Ile	Phe	Asn	Pro	Val	Glu	Thr	Lys	Asp	
1455						1460					1465				
tca	gtc	att	ccc	gcg	ccc	gag	gaa	ggg	gaa	acg	gca	acg	ttt	att	4950
Ser	Val	Ile	Pro	Ala	Pro	Glu	Glu	Gly	Glu	Thr	Ala	Thr	Phe	Ile	
1470						1475					1480				
tat	gtt	ggg	cgt	atg	aaa	ttt	gaa	ggc	cag	aaa	aga	gtt	aaa	gac	4995
Tyr	Val	Gly	Arg	Met	Lys	Phe	Glu	Gly	Gln	Lys	Arg	Val	Lys	Asp	
1485						1490					1495				
ctg	ctt	gat	ggc	tta	tca	caa	gcg	aaa	ggg	aac	tgg	aaa	ctc	cat	5040
Leu	Leu	Asp	Gly	Leu	Ser	Gln	Ala	Lys	Gly	Asn	Trp	Lys	Leu	His	
1500						1505					1510				
gta	ttg	ggg	gat	ggc	tcc	gat	ttc	gaa	aaa	tgc	cag	gct	tat	ggg	5085
Val	Leu	Gly	Asp	Gly	Ser	Asp	Phe	Glu	Lys	Cys	Gln	Ala	Tyr	Gly	
1515						1520					1525				
aga	gaa	tta	aat	att	gat	gat	cga	att	gtc	tgg	tat	ggg	tgg	caa	5130
Arg	Glu	Leu	Asn	Ile	Asp	Asp	Arg	Ile	Val	Trp	Tyr	Gly	Trp	Gln	
1530						1535					1540				
caa	tat	ccc	tgg	gaa	ttg	gtc	cag	caa	gat	att	gaa	aaa	gtg	agt	5175
Gln	Tyr	Pro	Trp	Glu	Leu	Val	Gln	Gln	Asp	Ile	Glu	Lys	Val	Ser	
1545						1550					1555				
gcg	tta	ttg	ctc	acg	tca	tct	ttt	gaa	ggg	ttc	cca	atg	acc	cta	5220
Ala	Leu	Leu	Leu	Thr	Ser	Ser	Phe	Glu	Gly	Phe	Pro	Met	Thr	Leu	
1560						1565					1570				
ctt	gaa	gcc	ttg	tcg	tgg	ggg	att	cct	tgt	atc	agt	gcc	gat	tgt	5265
Leu	Glu	Ala	Leu	Ser	Trp	Gly	Ile	Pro	Cys	Ile	Ser	Ala	Asp	Cys	
1575						1580					1585				
gtc	tcc	ggg	cct	gct	gac	att	att	caa	cct	gat	gtc	aat	ggc	cat	5310
Val	Ser	Gly	Pro	Ala	Asp	Ile	Ile	Gln	Pro	Asp	Val	Asn	Gly	His	
1590						1595					1600				
ctg	tat	caa	ccg	gga	gat	att	gct	ggg	ttt	gta	act	ctt	cta	aat	5355

Leu Tyr	Gln Pro	Gly Asp	Ile	Ala Gly	Phe Val	Thr	Leu Leu	Asn	
1605			1610			1615			
aaa tat	ata gca	ggt gaa	att	cat atc	gaa cat	gaa	aaa att	cct	5400
Lys Tyr	Ile Ala	Gly Glu	Ile	His Ile	Glu His	Glu	Lys Ile	Pro	
1620			1625			1630			
gcg tcg	atc gat	gaa ttt	tac	caa tcg	aag tat	tac	gat aga	tta	5445
Ala Ser	Ile Asp	Glu Phe	Tyr	Gln Ser	Lys Tyr	Tyr	Asp Arg	Leu	
1635			1640			1645			
cat aag	gta att	att tct	gct	att tcc	cgg agg	aaa	ta atg	cag cag	5492
His Lys	Val Ile	Ile Ser	Ala	Ile Ser	Arg Arg	Lys	Met Gln	Gln	
1650			1655			1660			
gtg ttt	ttc cag	gaa act	gag	ttt ctt	aat tca	gtt	att gat	tat	5537
Val Phe	Phe Gln	Glu Thr	Glu	Phe Leu	Asn Ser	Val	Ile Asp	Tyr	
1665			1670			1675			
gat cat	aaa gta	gaa aca	gaa	aat ctt	tgt ctg	gac	atc gct	tat	5582
Asp His	Lys Val	Glu Thr	Glu	Asn Leu	Cys Leu	Asp	Ile Ala	Tyr	
1680			1685			1690			
gga act	gac aaa	aac ttt	cta	ttt ggt	tgc gga	att	tcg att	gct	5627
Gly Thr	Asp Lys	Asn Phe	Leu	Phe Gly	Cys Gly	Ile	Ser Ile	Ala	
1695			1700			1705			
tca ata	tta aaa	tat aat	gaa	gga agt	cga ttg	tgt	ttc cat	att	5672
Ser Ile	Leu Lys	Tyr Asn	Glu	Gly Ser	Arg Leu	Cys	Phe His	Ile	
1710			1715			1720			
ttt act	gat tat	ttt ggt	gat	gat gat	cgt aag	tat	ttt gat	gcc	5717
Phe Thr	Asp Tyr	Phe Gly	Asp	Asp Asp	Arg Lys	Tyr	Phe Asp	Ala	
1725			1730			1735			
ctg gcg	ttg cag	tat aaa	acc	aga att	aaa ata	tat	ctg att	aat	5762
Leu Ala	Leu Gln	Tyr Lys	Thr	Arg Ile	Lys Ile	Tyr	Leu Ile	Asn	
1740			1745			1750			
ggt gat	cga ctg	cgc tca	ttg	cct agc	act aag	aat	tgg act	cat	5807
Gly Asp	Arg Leu	Arg Ser	Leu	Pro Ser	Thr Lys	Asn	Trp Thr	His	
1755			1760			1765			
gca ata	tat ttt	cgt ttt	gtt	att gca	gat tac	ttt	att aat	aag	5852
Ala Ile	Tyr Phe	Arg Phe	Val	Ile Ala	Asp Tyr	Phe	Ile Asn	Lys	
1770			1775			1780			
gcg cct	aaa gtc	ctt tat	ctg	gat gca	gat atc	att	tgt cag	ggg	5897
Ala Pro	Lys Val	Leu Tyr	Leu	Asp Ala	Asp Ile	Ile	Cys Gln	Gly	
1785			1790			1795			
act att	gag cca	cta att	aat	ttc tca	ttt cct	gac	gat aaa	gtc	5942
Thr Ile	Glu Pro	Leu Ile	Asn	Phe Ser	Phe Pro	Asp	Asp Lys	Val	
1800			1805			1810			
gca atg	gtt gtt	aca gaa	ggg	caa gct	gac tgg	tgg	gaa aaa	cgc	5987
Ala Met	Val Val	Thr Glu	Gly	Gln Ala	Asp Trp	Trp	Glu Lys	Arg	
1815			1820			1825			
gcc cat	tcg tta	ggt gtt	gcg	gga att	gct aaa	ggt	tac ttt	aac	6032

Ala	His	Ser	Leu	Gly	Val	Ala	Gly	Ile	Ala	Lys	Gly	Tyr	Phe	Asn		
1830						1835					1840					
tcc	ggt	ttt	tta	ttg	att	aat	act	gcc	caa	tgg	gcg	gct	cag	cag		6077
Ser	Gly	Phe	Leu	Leu	Ile	Asn	Thr	Ala	Gln	Trp	Ala	Ala	Gln	Gln		
1845						1850					1855					
gtt	tct	gca	cga	gct	att	gca	atg	cta	aat	gag	cca	gaa	ata	atc		6122
Val	Ser	Ala	Arg	Ala	Ile	Ala	Met	Leu	Asn	Glu	Pro	Glu	Ile	Ile		
1860						1865					1870					
aaa	aaa	ata	aca	cat	cct	gat	cag	gat	gtg	tta	aat	atg	ttg	ctg		6167
Lys	Lys	Ile	Thr	His	Pro	Asp	Gln	Asp	Val	Leu	Asn	Met	Leu	Leu		
1875						1880					1885					
gcg	gat	aaa	ctt	att	ttc	gct	gat	att	aaa	tat	aac	acc	cag	ttc		6212
Ala	Asp	Lys	Leu	Ile	Phe	Ala	Asp	Ile	Lys	Tyr	Asn	Thr	Gln	Phe		
1890						1895					1900					
agc	tta	aat	tat	caa	ctc	aaa	gaa	agc	ttt	ata	aac	cca	gta	acc		6257
Ser	Leu	Asn	Tyr	Gln	Leu	Lys	Glu	Ser	Phe	Ile	Asn	Pro	Val	Thr		
1905						1910					1915					
aac	gat	act	att	ttt	atc	cat	tat	atc	ggg	cca	acc	aag	ccc	tgg		6302
Asn	Asp	Thr	Ile	Phe	Ile	His	Tyr	Ile	Gly	Pro	Thr	Lys	Pro	Trp		
1920						1925					1930					
cat	gat	tgg	gcc	tgg	gat	tat	cct	gta	tca	caa	gcc	ttt	atg	gag		6347
His	Asp	Trp	Ala	Trp	Asp	Tyr	Pro	Val	Ser	Gln	Ala	Phe	Met	Glu		
1935						1940					1945					
gca	aaa	aat	gct	tcg	cca	tgg	aag	aat	acg	gcg	ttg	ctg	aaa	ccg		6392
Ala	Lys	Asn	Ala	Ser	Pro	Trp	Lys	Asn	Thr	Ala	Leu	Leu	Lys	Pro		
1950						1955					1960					
aac	aat	agc	aat	caa	tta	aga	tat	agc	gca	aaa	cat	atg	ctt	aaa		6437
Asn	Asn	Ser	Asn	Gln	Leu	Arg	Tyr	Ser	Ala	Lys	His	Met	Leu	Lys		
1965						1970					1975					
aag	cat	aga	tat	cta	aaa	gga	ttt	agc	aac	tat	ctt	ttt	tat	ttt		6482
Lys	His	Arg	Tyr	Leu	Lys	Gly	Phe	Ser	Asn	Tyr	Leu	Phe	Tyr	Phe		
1980						1985					1990					
att	gaa	aag	ata	aag	cat	taa	aactgggaaa	ctataaagta	atgatataag							6533
Ile	Glu	Lys	Ile	Lys	His											
1995																
ggtagcatt	gtg	gac	tca	ttt	cct	gcc	ata	gag	ata	gat	aaa	ggt	aaa			6581
	Val	Asp	Ser	Phe	Pro	Ala	Ile	Glu	Ile	Asp	Lys	Val	Lys			
	2000					2005					2010					
gcc	tgg	gat	ttt	cgg	cta	gct	aat	ata	aat	act	tct	gaa	tgt	tta		6626
Ala	Trp	Asp	Phe	Arg	Leu	Ala	Asn	Ile	Asn	Thr	Ser	Glu	Cys	Leu		
	2015					2020						2025				
aat	gtt	gcc	tat	ggt	gtc	gat	gct	aat	tat	ctt	gat	ggt	gta	ggt		6671
Asn	Val	Ala	Tyr	Gly	Val	Asp	Ala	Asn	Tyr	Leu	Asp	Gly	Val	Gly		
	2030					2035						2040				
gtt	tcc	atc	aca	tca	att	gtc	cta	aat	aat	cga	cat	att	aat	ctt		6716

Val Ser Ile Thr Ser Ile Val Leu Asn Asn Arg His Ile Asn Leu	
2045 2050 2055	
gat ttt tat att att gct gat gtt tat aat gat ggt ttt ttt caa	6761
Asp Phe Tyr Ile Ile Ala Asp Val Tyr Asn Asp Gly Phe Phe Gln	
2060 2065 2070	
aaa att gca aag ctt gca gag caa aac caa tta aga atc acg tta	6806
Lys Ile Ala Lys Leu Ala Glu Gln Asn Gln Leu Arg Ile Thr Leu	
2075 2080 2085	
tat aga att aac act gat aag ctc cag tgc ttg cct tgt aca cag	6851
Tyr Arg Ile Asn Thr Asp Lys Leu Gln Cys Leu Pro Cys Thr Gln	
2090 2095 2100	
gtc tgg tca aga gca atg tac ttc cgt tta ttt gca ttt caa tta	6896
Val Trp Ser Arg Ala Met Tyr Phe Arg Leu Phe Ala Phe Gln Leu	
2105 2110 2115	
ttg ggt tta acg ctt gat cgt ttg ctt tat ctt gat gca gat gtt	6941
Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr Leu Asp Ala Asp Val	
2120 2125 2130	
gtt tgt aaa ggc gat att agc caa cta tta cat ctg ggt tta aat	6986
Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His Leu Gly Leu Asn	
2135 2140 2145	
gga gcg gtt gct gct gtt gtt aaa gat gtt gag cca atg caa gaa	7031
Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro Met Gln Glu	
2150 2155 2160	
aag gcg gta tcc agg ttg tct gat cct gaa tta ctt ggg cag tac	7076
Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly Gln Tyr	
2165 2170 2175	
ttt aat tcc ggt gtc gtt tat tta gac tta aaa aaa tgg gct gac	7121
Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala Asp	
2180 2185 2190	
gca aaa cta aca gaa aaa gcg ttg tct att ctt atg agt aaa gat	7166
Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp	
2195 2200 2205	
aat gtt tat aaa tac cct gat cag gat gtt atg aat gtc tta ctg	7211
Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu	
2210 2215 2220	
aaa ggg atg aca tta ttt ttg cct cgt gag tac aat aca att tat	7256
Lys Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr	
2225 2230 2235	
aca att aaa agt gaa tta aaa gac aaa aca cat caa aac tat aaa	7301
Thr Ile Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys	
2240 2245 2250	
aag ctg att aca gaa agt act ctt ctt att cat tat aca ggt gca	7346
Lys Leu Ile Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala	
2255 2260 2265	
act aaa ccg tgg cac aaa tgg gca att tat cca tcg gta aaa tac	7391

Thr Lys Pro Trp His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr
 2270 2275 2280

tat aaa ata gct tta gaa aat tcc ccc tgg aaa gat gac tct cca 7436
 Tyr Lys Ile Ala Leu Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro
 2285 2290 2295

cga gat gcg aaa tca att att gaa ttt aaa aaa gat ata aac atc 7481
 Arg Asp Ala Lys Ser Ile Ile Glu Phe Lys Lys Asp Ile Asn Ile
 2300 2305 2310

ttt tag tgcaacatca tt 7499
 Phe

<210> 106 <211> 344 <212> PRT <213> Escherichia coli <400> 106

Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr
 1 5 10 15

Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln
 20 25 30

Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr
 35 40 45

Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe Asp Lys Ile Lys Asn Val
 50 55 60

Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn Asn Tyr Asp Leu Val Ile
 65 70 75 80

Asn Leu Thr Asp Gln Trp Met Val Ala Leu Leu Val Arg Cys Leu Pro
 85 90 95

Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly His Arg Gln His Gly Ile
 100 105 110

Trp Lys Lys Ser Phe Thr His Leu Ala Pro Ile His Gly Thr His Ile
 115 120 125

Val Glu Arg Asn Leu Ser Val Leu Glu Pro Leu Gly Ile Thr Asp Phe
 130 135 140

Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu Asp Cys Trp Lys Lys Met
 145 150 155 160

Arg Arg Glu Leu Asp Ala Leu Gly Val Lys Asp His Tyr Val Val Ile
 165 170 175

Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys Trp Asp Asn Asp Lys Phe
180 185 190

Ser Lys Val Ile Asp Ala Leu Gln Gln Arg Gly Tyr Gln Val Val Leu
195 200 205

Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala Cys Val Asp Glu Ile Ala
210 215 220

Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly Leu Ala Gly Lys Thr Arg
225 230 235 240

Phe Pro Glu Leu Gly Ala Leu Ile Asp His Ala Val Leu Phe Ile Gly
245 250 255

Val Asp Ser Ala Pro Gly His Ile Ala Ala Ala Val Lys Thr Pro Val
260 265 270

Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr
275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr
290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala
305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro
325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu
340

<210> 107 <211> 371 <212> PRT <213> Escherichia coli <400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln
1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His
20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe
35 40 45

Glu Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn
50 55 60

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala
65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe
85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe
100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys
180 185 190

Glu Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr
 290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro
 305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln
 325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp
 340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr
 355 360 365

Gly Gly Leu
 370

<210> 108 <211> 265 <212> PRT <213> Escherichia coli <400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp
 1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu
 20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe
 35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu
 50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala
 65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly
 85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile
 100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp
 115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala
 130 135 140

Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile Asn His
145 150 155 160

Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe Thr Gly
165 170 175

Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg Ala Gln
180 185 190

Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu Ile Gly
195 200 205

Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp Ile Trp
210 215 220

Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile Leu Ser
225 230 235 240

Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu Arg Ile
245 250 255

Lys Glu Arg Thr Gln Arg Lys Gly Leu
260 265

<210> 109 <211> 311 <212> PRT <213> Escherichia coli <400> 109

Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp Tyr Glu Leu Lys Met
1 5 10 15

Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys Asn Ile Thr Thr Pro
20 25 30

Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile Ser Lys Ile Gly Met Asp
35 40 45

Asn Ala Trp Leu Gly Arg Leu Phe Ile Lys His Tyr Leu Asn Asp Ile
50 55 60

Lys Lys Asp Asp Ile Ile Ile Ile Asn Asp Ser Val Val Asn Lys Gly
65 70 75 80

Ile Asn Lys Gln Ile Leu Lys Asn Ile Asn Cys His Lys Val Leu Leu
85 90 95

Leu Arg Asn Thr Val Gly Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr
 100 105 110

Phe Asp Ile Ile Tyr Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys
 115 120 125

Ile Lys Ala Ile Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg
 130 135 140

Asn Tyr Ser Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe
 145 150 155 160

Leu Gly Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu
 165 170 175

Arg Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp
 180 185 190

Lys Thr Ser Ser Thr Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile Ser
 195 200 205

Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile Val Asp
 210 215 220

Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile Leu Glu Ala
 225 230 235 240

Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile Asn Val Phe Gly
 245 250 255

Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile Ile Gly His Asp Asp
 260 265 270

Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser Ser Val Lys Pro Met Asp
 275 280 285

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile
 290 295 300

Val Ser Asp Phe Ile Asp Lys
 305 310

<210> 110 <211> 369 <212> PRT <213> Escherichia coli <400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile
 1 5 10 15

00751703-030102

00751703-030102

00751703-030102

09751708-020102

09751708-020102

Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp
 20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe
 35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys
 50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala
 65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp
 85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala
 100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe
 115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr
 130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly
 145 150 155 160

Val Ala Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys
 165 170 175

Asp Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile
 180 185 190

Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp Leu
 195 200 205

Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His Val Leu
 210 215 220

Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly Arg Glu Leu
 225 230 235 240

Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln Gln Tyr Pro Trp
 245 250 255

Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser Ala Leu Leu Leu Thr
 260 265 270

Ser Ser Phe Glu Gly Phe Pro Met Thr Leu Leu Glu Ala Leu Ser Trp
 275 280 285

Gly Ile Pro Cys Ile Ser Ala Asp Cys Val Ser Gly Pro Ala Asp Ile
 290 295 300

Ile Gln Pro Asp Val Asn Gly His Leu Tyr Gln Pro Gly Asp Ile Ala
 305 310 315 320

Gly Phe Val Thr Leu Leu Asn Lys Tyr Ile Ala Gly Glu Ile His Ile
 325 330 335

Glu His Glu Lys Ile Pro Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys
 340 345 350

Tyr Tyr Asp Arg Leu His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg
 355 360 365

Lys

<210> 111 <211> 339 <212> PRT <213> Escherichia coli <400> 111

Met Gln Gln Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile
 1 5 10 15

Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala
 20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala
 35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe
 50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala
 65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg
 85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe
 100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu
 115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile
 130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly
 145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly
 165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala
 180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn
 195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu
 210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn
 225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro
 245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro
 260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu
 275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn
 290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His
 305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys
 325 330 335

Ile Lys His

<210> 112 <211> 314 <212> PRT <213> Escherichia coli <400> 112

Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys Ala Trp Asp
1 5 10 15

Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu Asn Val Ala Tyr
20 25 30

Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly Val Ser Ile Thr Ser
35 40 45

Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala
50 55 60

Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu
65 70 75 80

Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu
85 90 95

Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg
100 105 110

Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr
115 120 125

Leu Asp Ala Asp Val Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His
130 135 140

Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro
145 150 155 160

Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly
165 170 175

Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala
180 185 190

Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp
195 200 205

Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys
210 215 220

Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile
245 250 255

Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp
260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu
275 280 285

Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro Arg Asp Ala Lys Ser Ile
290 295 300

Ile Glu Phe Lys Lys Asp Ile Asn Ile Phe
305 310

<210> 113 <211> 8391 <212> DNA <213> Mycobacterium bovis <220>
<221> CDS <222> (1)..(8391) <223>

<400> 113
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cct gac gtc ggc cgc cgt gtc ggt gcc cgg cgt gtt gct tac cca gat 96
Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp
20 25 30
cgc ggc gac ccg ggc gct ggc ccg tca agg cat gga cct cgt ggc cac 144
Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
35 40 45
ccc gcc ggt cgc cat ggc ggg cat tcg caa ggt gtg ctg gcg gtg gaa 192
Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60
gcc ctc aag gct ggt ggg gca cgc gac gtc gag ctg ttt gcc ttg gcc 240
Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80
cag ttg atc ggt gcc gcc gga acg ctg gtg gcc cgc cgg cgc gaa ttt 288
Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
85 90 95
ccg tcc tgg gcg atc gcg ccg atg gta tcg gtc acc aac gcc gac ccc 336
Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
100 105 110
gag cgc atc ggc cgg ttg ctc gac gag ttc gcc cag gac gtg cgc acg 384
Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr

115				120				125								
gtg	ctg	cca	ccg	gtg	ttg	tcc	atc	cgc	aac	ggc	cgg	cgt	gcc	gtc	gtc	432
Val	Leu	Pro	Pro	Val	Leu	Ser	Ile	Arg	Asn	Gly	Arg	Arg	Ala	Val	Val	
130				135				140								
atc	acc	ggc	acc	ccc	gag	cag	ctg	tcg	cgt	ttc	gag	ctt	tat	tgc	cgc	480
Ile	Thr	Gly	Thr	Pro	Glu	Gln	Leu	Ser	Arg	Phe	Glu	Leu	Tyr	Cys	Arg	
145				150				155				160				
cag	atc	tcc	gag	aag	gaa	gaa	gcc	gac	cgc	aag	aac	aag	gtc	cgc	ggc	528
Gln	Ile	Ser	Glu	Lys	Glu	Glu	Ala	Asp	Arg	Lys	Asn	Lys	Val	Arg	Gly	
165				170				175								
ggc	gac	gtc	ttc	tcg	ccg	gtc	ttc	gag	ccg	gtg	cag	gtg	gag	gtg	ggc	576
Gly	Asp	Val	Phe	Ser	Pro	Val	Phe	Glu	Pro	Val	Gln	Val	Glu	Val	Gly	
180				185				190								
ttt	cac	acc	ccg	cgg	cta	tcc	gac	ggg	atc	gac	atc	gtc	gcg	ggc	tgg	624
Phe	His	Thr	Pro	Arg	Leu	Ser	Asp	Gly	Ile	Asp	Ile	Val	Ala	Gly	Trp	
195				200				205								
gcc	gag	aag	gcg	ggc	ctc	gat	gtc	gcc	ttg	gct	cgg	gag	ctg	gcc	gat	672
Ala	Glu	Lys	Ala	Gly	Leu	Asp	Val	Ala	Leu	Ala	Arg	Glu	Leu	Ala	Asp	
210				215				220								
gcc	atc	ttg	atc	aga	aag	gtc	gac	tgg	gtc	gac	gag	atc	acc	cgt	gtc	720
Ala	Ile	Leu	Ile	Arg	Lys	Val	Asp	Trp	Val	Asp	Glu	Ile	Thr	Arg	Val	
225				230				235				240				
cac	cgg	gcc	ggc	gcc	cgc	tgg	atc	ctc	gac	ctg	ggg	ccg	ggc	gac	atc	768
His	Arg	Ala	Gly	Ala	Arg	Trp	Ile	Leu	Asp	Leu	Gly	Pro	Gly	Asp	Ile	
245				250				255								
ctg	acc	cga	ctg	acc	gca	ccg	gtg	atc	cgc	ggc	ctg	ggc	atc	ggc	atc	816
Leu	Thr	Arg	Leu	Thr	Ala	Pro	Val	Ile	Arg	Gly	Leu	Gly	Ile	Gly	Ile	
260				265				270								
gtg	ccg	gcg	cgt	acc	cgc	ggt	ggc	cag	cgc	aac	ctg	ttc	acc	gtc	ggc	864
Val	Pro	Ala	Arg	Thr	Arg	Gly	Gly	Gln	Arg	Asn	Leu	Phe	Thr	Val	Gly	
275				280				285								
gcc	acc	ccc	gag	gtt	gcc	cgg	gcc	tgg	tcg	agc	tac	gca	ccg	acc	gtg	912
Ala	Thr	Pro	Glu	Val	Ala	Arg	Ala	Trp	Ser	Ser	Tyr	Ala	Pro	Thr	Val	
290				295				300								
gtt	cgc	ctc	ccc	gac	ggc	agg	gtc	aag	ctc	tcg	acg	aag	ttc	acc	cgg	960
Val	Arg	Leu	Pro	Asp	Gly	Arg	Val	Lys	Leu	Ser	Thr	Lys	Phe	Thr	Arg	
305				310				315				320				
ctg	acc	cgc	cgc	tcg	ccg	atc	ctg	ctc	gcg	ggc	atg	acc	ccg	acc	acc	1008
Leu	Thr	Arg	Arg	Ser	Pro	Ile	Leu	Leu	Ala	Gly	Met	Thr	Pro	Thr	Thr	
325				330				335								
gtg	gac	gcc	aag	atc	gtc	gcc	gcg	gcg	gcc	aac	ggc	cgg	cac	tgg	gcc	1056
Val	Asp	Ala	Lys	Ile	Val	Ala	Ala	Ala	Ala	Asn	Gly	Arg	His	Trp	Ala	
340				345				350								
gag	ctg	gcg	gcg	cgg	ggc	agg	tca	ccg	aag	aga	tct	tcg	gta	acc	gca	1104
Glu	Leu	Ala	Ala	Arg	Gly	Arg	Ser	Pro	Lys	Arg	Ser	Ser	Val	Thr	Ala	

355					360					365						
tcg	aac	aaa	tgg	ccg	gcc	tgc	tcg	agc	cgg	gcc	gca	cct	atc	agt	tca	1152
Ser	Asn	Lys	Trp	Pro	Ala	Cys	Ser	Ser	Arg	Ala	Ala	Pro	Ile	Ser	Ser	
370					375					380						
acg	cgc	tgt	tcc	tcg	atc	cct	acc	tgt	gaa	gct	tca	ggg	ggg	cgg	caa	1200
Thr	Arg	Cys	Ser	Ser	Ile	Pro	Thr	Cys	Glu	Ala	Ser	Gly	Gly	Arg	Gln	
385					390					395					400	
gcg	gtt	ggg	gca	gaa	ggc	ccg	cca	gtc	cgg	cgc	cgc	gat	cga	cgg	cgt	1248
Ala	Val	Gly	Ala	Glu	Gly	Pro	Pro	Val	Arg	Arg	Arg	Asp	Arg	Arg	Arg	
405					410					415						
ggg	gat	cag	cgc	cgg	cat	ccc	aga	cct	cga	cga	ggc	cgt	cga	gct	gat	1296
Gly	Asp	Gln	Arg	Arg	His	Pro	Arg	Pro	Arg	Arg	Gly	Arg	Arg	Ala	Asp	
420					425					430						
cga	cga	act	ggg	cga	cat	cgg	cat	cag	cca	cgt	cgt	gtt	caa	acc	cgg	1344
Arg	Arg	Thr	Gly	Arg	His	Arg	His	Gln	Pro	Arg	Arg	Val	Gln	Thr	Arg	
435					440					445						
gac	cat	cga	gca	gat	ccg	ctc	ggg	gat	tcg	cat	cgc	cac	cga	ggg	gcc	1392
Asp	His	Arg	Ala	Asp	Pro	Leu	Gly	Asp	Ser	His	Arg	His	Arg	Gly	Ala	
450					455					460						
cac	caa	gcc	ggg	gat	cat	gca	cgt	cga	ggg	ccg	ggc	gcg	ccg	gcg	ggc	1440
His	Gln	Ala	Gly	Asp	His	Ala	Arg	Arg	Gly	Pro	Gly	Ala	Pro	Ala	Gly	
465					470					475					480	
acc	att	cct	ggg	agg	atc	tca	cac	ctg	ctg	ctg	gct	acc	tac	tcg	gca	1488
Thr	Ile	Pro	Gly	Arg	Ile	Ser	His	Leu	Leu	Leu	Ala	Thr	Tyr	Ser	Ala	
485					490					495						
gat	cgg	gca	ccg	cgc	caa	cat	cac	gtg	tgc	gtc	ggc	ggc	ggc	cat	ctc	1536
Asp	Arg	Ala	Pro	Arg	Gln	His	His	Val	Cys	Val	Gly	Gly	Gly	His	Leu	
500					505					510						
ggc	acc	ccg	aag	aag	ggc	tgc	gga	tat	ttg	tcc	ggg	cct	ggg	cgc	agc	1584
Gly	Thr	Pro	Lys	Lys	Gly	Cys	Gly	Tyr	Leu	Ser	Gly	Pro	Gly	Arg	Ser	
515					520					525						
gta	cgg	ctt	ccc	att	gat	gcc	gat	cga	cgc	atc	ctg	gtc	ggc	acc	gcg	1632
Val	Arg	Leu	Pro	Ile	Asp	Ala	Asp	Arg	Arg	Ile	Leu	Val	Gly	Thr	Ala	
530					535					540						
gcg	atg	gcc	acc	aag	gaa	tcc	acc	acg	tcg	cca	tcg	gtc	aag	cgg	atg	1680
Ala	Met	Ala	Thr	Lys	Glu	Ser	Thr	Thr	Ser	Pro	Ser	Val	Lys	Arg	Met	
545					550					555					560	
ctc	gtc	gac	act	cag	ggc	acc	gac	caa	tgg	atc	agc	gcc	gga	aaa	gcg	1728
Leu	Val	Asp	Thr	Gln	Gly	Thr	Asp	Gln	Trp	Ile	Ser	Ala	Gly	Lys	Ala	
565					570					575						
cag	ggc	cgc	atg	cct	cca	gcc	gag	tca	gct	cgg	tgc	cga	cat	cca	cga	1776
Gln	Gly	Arg	Met	Pro	Pro	Ala	Glu	Ser	Ala	Arg	Cys	Arg	His	Pro	Arg	
580					585					590						
gat	cga	cac	agc	gca	tcc	gtg	cgg	cgc	tgc	tcg	acg	agg	tgg	ccg	gtg	1824
Asp	Arg	His	Ser	Ala	Ser	Val	Arg	Arg	Cys	Ser	Thr	Arg	Trp	Pro	Val	

595					600					605							
acg Thr	cgg Arg	agg Arg	cgg Arg	tcg Ser	cgg Arg	agc Ser	gtc Val	gca Ala	tgg Trp	cca Pro	aga Arg	ccg Pro	cca Pro	agc Ser	cct Pro	1872	
610					615					620							
act Thr	tgc Cys	cga Arg	cgt Arg	cgc Arg	cga Arg	cat His	gac Asp	cta Leu	cct Pro	gca Ala	gtg Val	gct Ala	gcg Ala	ggc Gly	gct Ala	1920	
625					630					635					640		
acg Thr	tcg Ser	aac Asn	tgg Trp	cca Pro	tcg Ser	ggg Gly	aag Lys	gca Ala	act Thr	cga Arg	ccg Pro	ccg Pro	aca Thr	ccg Pro	cct Pro	1968	
645					650					655							
cgg Arg	tgg Trp	gca Ala	gcc Ala	cgt Arg	ggc Gly	tgg Trp	ccg Pro	aca Thr	ctg Leu	gcg Ala	gga Gly	ccg Pro	ctt Leu	cga Arg	gca Ala	2016	
660					665					670							
gat Asp	gct Ala	gca Ala	gcg Ala	tgc Cys	cga Arg	agc Ser	ccg Pro	gtt Val	gca Ala	ccc Pro	aca Thr	gga Gly	ttt Phe	cgg Arg	ccc Pro	2064	
675					680					685							
gat Asp	cca Pro	gac Asp	gct Ala	att Ile	cac His	cga Arg	tgc Cys	tgg Trp	cct Pro	gct Ala	gga Gly	caa Gln	tcc Ser	gca Ala	gca Ala	2112	
690					695					700							
gcg Ala	atc Ile	gcc Ala	gcc Ala	ctc Leu	gtg Val	gcg Ala	cgc Arg	tac Tyr	ccc Pro	gac Asp	gcc Ala	gag Glu	acc Thr	gtg Val	cag Gln	2160	
705					710					715					720		
ttg Leu	cat His	ccc Pro	gcg Ala	gat Asp	gtg Val	ccc Pro	ttt Phe	ttc Phe	gtg Val	acg Thr	ttg Leu	tgc Cys	aag Lys	acg Thr	ctg Leu	2208	
725					730					735							
ggc Gly	aag Lys	ccg Pro	gtc Val	aac Asn	ttc Phe	gtg Val	ccg Pro	gcg Ala	atc Ile	gac Asp	ctc Leu	gtc Val	gtg Val	cgc Arg	gct Ala	2256	
740					745					750							
ggt Gly	ggc Gly	gca Ala	gcg Ala	act Thr	cgc Arg	tgt Cys	ggc Gly	agg Arg	ccc Pro	acg Thr	acg Thr	ccc Pro	gct Ala	acg Thr	acg Thr	2304	
755					760					765							
ccg Pro	atg Met	cgg Arg	tgt Cys	gca Ala	tca Ser	ttc Phe	cgg Arg	gca Ala	cgc Arg	gtc Val	ggt Gly	agc Ser	cgc Arg	atc Ile	acc Thr	2352	
770					775					780							
cgg Arg	atg Met	gat Asp	gaa Glu	ccc Pro	gtc Val	ggt Gly	gag Glu	ttg Leu	ctg Leu	gac Asp	gct Ala	ttc Phe	gag Glu	caa Gln	gcc Ala	2400	
785					790					795					800		
gca Ala	atc Ile	gat Asp	gaa Glu	gtg Val	ctc Leu	ggc Gly	gcc Ala	ggt Gly	gtc Val	gag Glu	ccg Pro	aag Lys	gat Asp	gtc Val	gcg Ala	2448	
805					810					815							
tcc Ser	ggc Gly	cgg Arg	ctg Leu	ggc Gly	cgg Arg	gcc Ala	gac Asp	gtg Val	gcc Ala	gga Gly	ccg Pro	ttg Leu	gct Ala	gtc Val	gtc Val	2496	
820					825					830							
ctc Leu	gac Asp	gca Ala	ccc Pro	gat Asp	gtg Val	cgc Arg	tgg Trp	gcc Ala	ggt Gly	cgc Arg	acc Thr	gtg Val	acc Thr	aac Asn	ccg Pro	2544	

835	840	845	
gtg cat cgg atc cgc gac cgg gcc gaa tgg cag gtg cac gat gga ccc Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro 850 855 860			2592
gaa aac ccg cgc gcc gca cac tca tcc acc ggc gcc cgg ctg cag acg Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr 865 870 875 880			2640
cac ggc gac gac gtc gcc ttg agc gtc gcg cgt ctc ggg cac ctg ggt His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly 885 890 895			2688
cga cat ccg att cac gtt gcc ggc caa cac cgt cga tgg cgg cac ccc Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro 900 905 910			2736
ggt gat cgc cac cga gga cgc cac cac gcc atg cgc acg gtg ctg cga Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg 915 920 925			2784
tcg ccg ccg gtg tcg aca gcc cgg agt tct tgc tgc ggt ggc caa cgg Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg 930 935 940			2832
gac ggc cac ttt gac ggt gga ctg gca ccc cga gcg tgt tgc cga cca Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro 945 950 955 960			2880
cac cgt cac cgc cac gtt cgg tgc gcg ctg gca ccc agc ctc acc aac His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn 965 970 975			2928
gtg ccg acg cga ctc gtc ggc cct tgt tgg cca gcg gtt ttc gcg gcc Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala 980 985 990			2976
atc gga tcg gcg gtc acc gac acc ggt gag ccg gtg gtg gaa ggc ctg Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu 995 1000 1005			3024
ctg agc ctg gtg cat ctg gac acg cgg ccg cgc gtg gtc ggt cag Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln 1010 1015 1020			3069
ctg ccc acg gtc ccg gcc caa ttg acc gtc acg caa cgg ctg cca Leu Pro Thr Val Pro Ala Gln Leu Thr Val Thr Gln Arg Leu Pro 1025 1030 1035			3114
acg caa ccg ata cgg aca tgg gcc gcg tcg tgc cgg tct cgg tcg Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser 1040 1045 1050			3159
tcg ttc acc gca tgg cgc cgt gat cgc cac tct cga gga gcg att Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile 1055 1060 1065			3204
cgc gat cct ggg tcg cac cgg ttc gcc gag ctg gac cgg cgc gag Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu 1070 1075 1080			3249

1070	1075	1080	
ccg gtg gcg cgg tgt cgc gaa cgc cac cga cac ccc gcg cgt cgc 3294 Pro Val Ala Arg Cys Arg Glu Arg His Arg His Pro Ala Arg Arg 1085 1090 1095			
cgc cgc gac gtc acg atc acc gcg ccg gtc gac atg cgc ccg ttc 3339 Arg Arg Asp Val Thr Ile Thr Ala Pro Val Asp Met Arg Pro Phe 1100 1105 1110			
gcg gtg gtg tcc ggc gac cac aac ccc att cac acc gac cgg gcc 3384 Ala Val Val Ser Gly Asp His Asn Pro Ile His Thr Asp Arg Ala 1115 1120 1125			
gcc gct gct tgc cgg cct gga gtc gcc gat cgt gca cgg cat gtg 3429 Ala Ala Ala Cys Arg Pro Gly Val Ala Asp Arg Ala Arg His Val 1130 1135 1140			
gct gtc ggc cgc ggc gca aca cgc ggt gac cgg cac cga cgg gca 3474 Ala Val Gly Arg Gly Ala Thr Arg Gly Asp Arg His Arg Arg Ala 1145 1150 1155			
ggc ccg cca ccg gcc cgg ctg gtc ggc tgg acc gcg cgg ttt ttg 3519 Gly Pro Pro Pro Ala Arg Leu Val Gly Trp Thr Ala Arg Phe Leu 1160 1165 1170			
ggc atg gtg gcc ccg gcg acg agg tgg act tcc ggt cga gcg cgt 3564 Gly Met Val Ala Pro Ala Thr Arg Trp Thr Ser Gly Arg Ala Arg 1175 1180 1185			
cgg atc gac cag ggc gca gag att gtg gac gtg gcc gcg cgc gtc 3609 Arg Ile Asp Gln Gly Ala Glu Ile Val Asp Val Ala Ala Arg Val 1190 1195 1200			
ggg tcg gat cta gtg atg tcg gcc tcc gcg cga ctg gcc gca ccc 3654 Gly Ser Asp Leu Val Met Ser Ala Ser Ala Arg Leu Ala Ala Pro 1205 1210 1215			
aag acg gtc tac gca ttc ccc ggc cag ggc atc caa cac aag ggc 3699 Lys Thr Val Tyr Ala Phe Pro Gly Gln Gly Ile Gln His Lys Gly 1220 1225 1230			
atg ggc atg gag gtg cgc gcc gct cca agg cgg ccc gca agg tgt 3744 Met Gly Met Glu Val Arg Ala Ala Pro Arg Arg Pro Ala Arg Cys 1235 1240 1245			
ggg aca ccg cgg aca agt tca ccc gcg aca ccc tgg gct tct cgg 3789 Gly Thr Pro Arg Thr Ser Ser Pro Ala Thr Pro Trp Ala Ser Arg 1250 1255 1260			
tac tgc acg tgg tcc gcg aca acc cga cca gca tca tcg cca gcg 3834 Tyr Cys Thr Trp Ser Ala Thr Thr Arg Pro Ala Ser Ser Pro Ala 1265 1270 1275			
gtg tgc act acc acc acc gac ggg gtg ctc tac ctg acg cag ttc 3879 Val Cys Thr Thr Thr Thr Asp Gly Val Leu Tyr Leu Thr Gln Phe 1280 1285 1290			
acc cag gtc gcg atg gcg acg gtg gcg gcc ggg cag gtc gcc gag 3924 Thr Gln Val Ala Met Ala Thr Val Ala Ala Gly Gln Val Ala Glu			

1295	1300	1305	
atg cgt gaa cag gga gcc ttc gtc gaa ggc gcc atc gcg tgc ggc Met Arg Glu Gln Gly Ala Phe Val Glu Gly Ala Ile Ala Cys Gly 1310 1315 1320			3969
cac tcg gtc ggc gag tac acc gcg ctg gcc tgc gtg acc ggc atc His Ser Val Gly Glu Tyr Thr Ala Leu Ala Cys Val Thr Gly Ile 1325 1330 1335			4014
tac caa ctg gaa gcc ttg ctg gag atg gtg ttt cac cgc ggg tcg Tyr Gln Leu Glu Ala Leu Leu Glu Met Val Phe His Arg Gly Ser 1340 1345 1350			4059
aag atg cac gac atc gtt ccg gcg gac gag ctc ggc cgc tcc aac Lys Met His Asp Ile Val Pro Arg Asp Glu Leu Gly Arg Ser Asn 1355 1360 1365			4104
tat cgg ctg tcg gcc atc cgg ccg tcc cag atc gac ctc gac gac Tyr Arg Leu Ser Ala Ile Arg Pro Ser Gln Ile Asp Leu Asp Asp 1370 1375 1380			4149
gcc gac gtg ccc gcg ttc gtc gcc ggg atc gcg gag agc acc ggt Ala Asp Val Pro Ala Phe Val Ala Gly Ile Ala Glu Ser Thr Gly 1385 1390 1395			4194
gaa ttc ctg gag atc gag aat ttc aac ctc ggt ggc tcg caa tac Glu Phe Leu Glu Ile Glu Asn Phe Asn Leu Gly Gly Ser Gln Tyr 1400 1405 1410			4239
gcg atc gcg ggc acg gta cgc ggc ctc gag gcg ctc gag gcc gag Ala Ile Ala Gly Thr Val Arg Gly Leu Glu Ala Leu Glu Ala Glu 1415 1420 1425			4284
gtg gag cgg cgc cgc gag ctc acc ggc ggc cga cgg tcg ttc att Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile 1430 1435 1440			4329
ttg gtg ccc ggc atc gat gtt ccg ttc cac tcg cga gtg ctg cgg Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg 1445 1450 1455			4374
gtc ggg gtg gcc gaa ttc cgg cgc tcg ctg gac cgg gtc atg cgg Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg 1460 1465 1470			4419
ccg acg cgg acc cga cct gat cat cgg gcg cta cat tcc caa cct Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro 1475 1480 1485			4464
ggt gcc gcg gaa gtt caa ccc tgg acc gcg act tca tcc agg aaa Gly Ala Ala Glu Val Gln Pro Trp Thr Ala Thr Ser Ser Arg Lys 1490 1495 1500			4509
tcc ggg att tgg tgc ccc gcc gag ccg ctc gac gag atc ctc gcc Ser Gly Ile Trp Cys Pro Ala Glu Pro Leu Asp Glu Ile Leu Ala 1505 1510 1515			4554
gac tac gac acc tgg ctt cgc gac gac cgg cga gat ggc gcg cac Asp Tyr Asp Thr Trp Leu Arg Asp Asp Arg Arg Asp Gly Ala His 1520 1525 1530			4599

1520	1525	1530	
ggt gtt cat cga gct gct ggc Gly Val His Arg Ala Ala Gly 1535	atg gca att cgc cag Met Ala Ile Arg Gln 1540	ccc ggt gcg Pro Gly Ala 1545	4644
ctg gat cga gac gca gga tct Leu Asp Arg Asp Ala Gly Ser 1550	gct gtt cat cga gga Ala Val His Arg Gly 1555	ggc gcc gcg Gly Ala Gly 1560	4689
ggg ctg ggt gtg gag cga ttc Gly Leu Gly Val Glu Arg Phe 1565	gtc gag atc ggt gtg Val Glu Ile Gly Val 1570	aag agc tca Lys Ser Ser 1575	4734
ccg acg gtg gcg ggg tct tgc Pro Thr Val Ala Gly Ser Cys 1580	cac caa cac cct caa His Gln His Pro Gln 1585	act gcc cga Thr Ala Arg 1590	4779
ata cgc cca cag cac agt gaa Ile Arg Pro Gln His Ser Glu 1595	gtg ctc aac gcc gag Val Leu Asn Ala Glu 1600	cgt gat gcg Arg Asp Ala 1605	4824
cgg tgc tgt tcg cca ccg aca Arg Cys Cys Ser Pro Pro Thr 1610	ccg acc cgg agc cgg Pro Thr Arg Ser Arg 1615	agc cgg agg Ser Arg Arg 1620	4869
aag acg agc cgg tcg cgg aat Lys Thr Ser Arg Ser Arg Asn 1625	cgc ccg cgc cgg acg Arg Pro Arg Arg Thr 1630	tcg tct cgg Ser Ser Arg 1635	4914
aag ccg ccc ccg tcg cgc cgg Lys Pro Pro Pro Ser Arg Arg 1640	ccg ctt cgt cgg cgg Pro Leu Arg Arg Arg 1645	gcc cgc gtc Ala Arg Val 1650	4959
ccg acg atc tgg ttt tcg acg Pro Thr Ile Trp Phe Ser Thr 1655	ccg ccg atg cca cgc Pro Pro Met Pro Arg 1660	tgc gtg atc Cys Val Ile 1665	5004
gcg ctc tcg gcc aag atg cgc Ala Leu Ser Ala Lys Met Arg 1670	atc gac cag atc gaa Ile Asp Gln Ile Glu 1675	gaa ctc gac Glu Leu Asp 1680	5049
tcc atc gag tcc atc acc gac Ser Ile Glu Ser Ile Thr Asp 1685	ggt gcg tcg tcg cgg Gly Ala Ser Ser Arg 1690	cgc aac cag Arg Asn Gln 1695	5094
ctg ctg gtg gac ctg ggc tcc Leu Leu Val Asp Leu Gly Ser 1700	gag ctg aac ctc ggt Glu Leu Asn Leu Gly 1705	gcc att gaa Ala Ile Glu 1710	5139
cgg cgc cgc cga atc gga cct Arg Arg Arg Arg Ile Gly Pro 1715	ggc cgg tct gcg ctc Gly Arg Ser Ala Leu 1720	aca ggt gac Thr Gly Asp 1725	5184
caa act ggc gcg cac cta caa Gln Thr Gly Ala His Leu Gln 1730	cgt tac ggc cca gtg Arg Tyr Gly Pro Val 1735	ctt tcc gac Leu Ser Asp 1740	5229
gcc atc aac gac cac gtt cgc Ala Ile Asn Asp His Val Arg 1740	acc gtc ctc gga ccg Thr Val Leu Gly Pro 1745	tcg ggc aag Ser Gly Lys 1750	5274

1745	1750	1755	
cgg ccc ggc gcc atc gcc gag Arg Pro Gly Ala Ile Ala Glu 1760	cgg gtg aag aag acc Arg Val Lys Lys Thr 1765	tgg gag ctc Trp Glu Leu 1770	5319
ggt gag gct ggg cca agc atg Gly Glu Ala Gly Pro Ser Met 1775	tca ccg tcg agg tcg Ser Pro Ser Arg Ser 1780	cgc tgg gca Arg Trp Ala 1785	5364
ccc gcg agg gca gca gcg ttc Pro Ala Arg Ala Ala Ala Phe 1790	gcg gcg gcg cca tgg Ala Ala Ala Pro Trp 1795	gcc acc tgc Ala Thr Cys 1800	5409
acg agg gcg cgc tgg ccg atg Thr Arg Ala Arg Trp Pro Met 1805	ccg cct ccg tcg aca Pro Pro Pro Ser Thr 1810	agg tca tcg Arg Ser Ser 1815	5454
acg cgg cgg tcg cat cgg tgg Thr Arg Arg Ser His Arg Trp 1820	ccg cgg cca ggg cgt Pro Arg Pro Gly Arg 1825	ttc ggt agc Phe Gly Ser 1830	5499
gct gcg tcg gcc ggt agt ggc Ala Ala Ser Ala Gly Ser Gly 1835	ggc gcc acc atc gac Gly Ala Thr Ile Asp 1840	gcg gcc gcg Ala Ala Ala 1845	5544
ctc agc gag ttc acc gac caa Leu Ser Glu Phe Thr Asp Gln 1850	atc acc ggc cgt gag Ile Thr Gly Arg Glu 1855	ggc gtg ctg Gly Val Leu 1860	5589
cct ccg cgg ccc gcc tgg tgc Pro Pro Arg Pro Ala Trp Cys 1865	tgg ggc agc tgg gac Trp Gly Ser Trp Asp 1870	tgg acg acc Trp Thr Thr 1875	5634
cca tca acc gtt gcc ggc gcg Pro Ser Thr Val Ala Gly Arg 1880	ccc gat tcc gag ctg Pro Asp Ser Glu Leu 1885	atc gac ttg Ile Asp Leu 1890	5679
gtc acc gcc gaa ctg gga cgg Val Thr Ala Glu Leu Gly Arg 1895	act ggc cgc ggt tgg Thr Gly Arg Gly Trp 1900	tgg cac cgg Trp His Arg 1905	5724
tgt tcg acc cca aga agg ccg Cys Ser Thr Pro Arg Arg Pro 1910	tcg tat tcg acg acc Ser Tyr Ser Thr Thr 1915	gct ggc cag Ala Gly Gln 1920	5769
cgc ccg cga gga cct ggt gaa Arg Pro Arg Gly Pro Gly Glu 1925	gct gtg gct gac cga Ala Val Ala Asp Arg 1930	cgg aag gac Arg Lys Asp 1935	5814
cga agg cga cat cga cgc cga Arg Arg Arg His Arg Arg Arg 1940	ctg gcc gcg ctg gcg Leu Ala Ala Leu Ala 1945	gag cgc ttc Glu Arg Phe 1950	5859
gag ggt gcc gcc acg tcg tgg Glu Gly Ala Ala Thr Ser Trp 1955	cga ccc agg cta cct Arg Pro Arg Leu Pro 1960	ggt ggc aag Gly Gly Lys 1965	5904
gta agt cgc tcg cgc ggg ccg Val Ser Arg Ser Arg Gly Pro 1970	gca gat cca tgc atc Ala Asp Pro Cys Ile 1975	gct gta cgg Ala Val Arg 1980	5949

1970	1975	1980	
ccg cat gcc gcc ggc gcc gag aac ccc gaa ccc cgc gta cgg cgg Pro His Ala Ala Gly Ala Glu Asn Pro Glu Pro Arg Val Arg Arg 1985 1990 1995			5994
cga agt tgc cgt ggt gac cgg cgc ttc gaa ggg ttc gat cgc cgc Arg Ser Cys Arg Gly Asp Arg Arg Phe Glu Gly Phe Asp Arg Arg 2000 2005 2010			6039
gtc ggt ggt ggc tcg gct gct cga cgc gga gcc acc gtc atc gcg Val Gly Gly Gly Ser Ala Ala Arg Arg Gly Ala Thr Val Ile Ala 2015 2020 2025			6084
acc acc tcc aag ctc gac gag gag cgg ctg cgg ttc tac cgc acg Thr Thr Ser Lys Leu Asp Glu Glu Arg Leu Arg Phe Tyr Arg Thr 2030 2035 2040			6129
ctg tat cgc gac cac gcc cgt tac ggc gcg gcg ctg tgg ctg gtc Leu Tyr Arg Asp His Ala Arg Tyr Gly Ala Ala Leu Trp Leu Val 2045 2050 2055			6174
gcg gcg aac atg gcg tcc tac tcc gac gtc gac gcc ctg gtc gaa Ala Ala Asn Met Ala Ser Tyr Ser Asp Val Asp Ala Leu Val Glu 2060 2065 2070			6219
tgg atc ggc acc gaa cag acc gaa agc ctt ggg ccg cag tcg att Trp Ile Gly Thr Glu Gln Thr Glu Ser Leu Gly Pro Gln Ser Ile 2075 2080 2085			6264
cac atc aaa gac gcg cag acc ccg acg ctg ctg ttc cgt tcg cgg His Ile Lys Asp Ala Gln Thr Pro Thr Leu Leu Phe Arg Ser Arg 2090 2095 2100			6309
cgc acg cgt gtc ggg act gtc gga ggc cgg ttc gcg cgc cga gat Arg Thr Arg Val Gly Thr Val Gly Gly Arg Phe Ala Arg Arg Asp 2105 2110 2115			6354
gga gat gaa agt gct gct gtg gcg gtg caa cgg ctg atc ggc ggc Gly Asp Glu Ser Ala Ala Val Ala Val Gln Arg Leu Ile Gly Gly 2120 2125 2130			6399
ctg tcg acg atc ggc gcc gaa cgc gac atg ccg tcg cgg ctc gag Leu Ser Thr Ile Gly Ala Glu Arg Asp Met Pro Ser Arg Leu Glu 2135 2140 2145			6444
cgt ggt gct gcc cgg ctc gcc caa ccg tgg cat gtt cgg cgg cga Arg Gly Ala Ala Arg Leu Ala Gln Pro Trp His Val Arg Arg Arg 2150 2155 2160			6489
cgg gcc cta cgg cga agc caa gtc cgc gct gga tgc cgt ggt gac Arg Ala Leu Arg Arg Ser Gln Val Arg Ala Gly Cys Arg Gly Asp 2165 2170 2175			6534
gcg ctg gca cgc cga gtc gtc ctg ggc ggc acg ggt cag cct ggc Ala Leu Ala Arg Arg Val Val Leu Gly Gly Thr Gly Gln Pro Gly 2180 2185 2190			6579
gca cgc gct cat cgg ctg gac ccg cgg cac cgg gct gat ggg cca Ala Arg Ala His Arg Leu Asp Pro Arg His Arg Ala Asp Gly Pro 2200 2205 2210			6624

2195	2200	2205	
caa cga tgc cat cgt ggc cgc Gln Arg Cys His Arg Gly Arg 2210	cgt cga aga ggc cgg Arg Arg Arg Gly Arg 2215	ggt cac cac Gly His His 2220	6669
cta ctc gac cga cga gat ggc Leu Leu Asp Arg Arg Asp Gly 2225	gcg gct gct gct cga Ala Ala Ala Ala Arg 2230	cct gtg tca Pro Val Ser 2235	6714
tgc gga atc caa ggt ggc tgc Cys Gly Ile Gln Gly Gly Cys 2240	ggc cgt tcg ccg atc Gly Arg Ser Pro Ile 2245	aag gcc gac Lys Ala Asp 2250	6759
ctg acc ggg ggc ctg ccg agg Leu Thr Gly Gly Leu Pro Arg 2255	cca acc tcg aca tgg Pro Thr Ser Thr Trp 2260	ccg agc tgg Pro Ser Trp 2265	6804
cgg cca agg cgc gcg agc aga Arg Pro Arg Arg Ala Ser Arg 2270	tgt cgg cag cgg cgg Cys Arg Gln Arg Arg 2275	ccg tcg acg Pro Ser Thr 2280	6849
agg acg ccg agg ccc ctg gcg Arg Thr Pro Arg Pro Leu Ala 2285	cca tcg ccg cgc tgc Pro Ser Pro Arg Cys 2290	cgt cgc cgc Arg Arg Arg 2295	6894
ccc ggt ttc acc ccc gca ccg Pro Gly Phe Thr Pro Ala Pro 2300	ccg ccg caa tgg gac Pro Pro Gln Trp Asp 2305	gac ctc gat Asp Leu Asp 2310	6939
gtc gac ccg gcc gac ctg gtg Val Asp Pro Ala Asp Leu Val 2315	gtg atc gtc ggc ggc Val Ile Val Gly Gly 2320	cgc gaa atc Arg Glu Ile 2325	6984
ggc ccg tac ggc tcg tca cgc Gly Pro Tyr Gly Ser Ser Arg 2330	acc ccg ttc gag atg Thr Arg Phe Glu Met 2335	gag gtc gaa Glu Val Glu 2340	7029
aac gag ctg tcg gcg gcc ggc Asn Glu Leu Ser Ala Ala Gly 2345	gtg ctg gag ctg gcc Val Leu Glu Leu Ala 2350	tgg acc act Trp Thr Thr 2355	7074
ggg ttg atc gct ggg aga cga Gly Leu Ile Ala Gly Arg Arg 2360	ccc gca acc ccg ttg Pro Ala Thr Arg Leu 2365	gta cga cac Val Arg His 2370	7119
cga atc ccg cga aat ggt cga Arg Ile Arg Arg Asn Gly Arg 2375	cga atc cga gtt ggt Arg Ile Arg Val Gly 2380	gca gcg cta Ala Ala Leu 2385	7164
cac gac gcc gtg gtg cag cgc His Asp Ala Val Val Gln Arg 2390	gtc ggc att cgc gaa Val Gly Ile Arg Glu 2395	ttc gtt gat Phe Val Asp 2400	7209
gac ggc gcg atc gac ccc gac Asp Gly Ala Ile Asp Pro Asp 2405	cac gcc tcg ccg ctg His Ala Ser Pro Leu 2410	ctg gtg tcg Leu Val Ser 2415	7254
gtg ttc ctg gag aag gac ttc Val Phe Leu Glu Lys Asp Phe 2420	gcg ttc gtg gtg tcc Ala Phe Val Val Ser 2425	tcg gag gcc Ser Glu Ala 2430	7299

2420					2425					2430					
gat	gcg	cgc	gcc	ttc	gtc	gag	ttc	gat	ccc	gag	cac	acg	gtc	atc	7344
Asp	Ala	Arg	Ala	Phe	Val	Glu	Phe	Asp	Pro	Glu	His	Thr	Val	Ile	
	2435						2440				2445				
cgg	ccg	gtg	ccc	gac	tcc	acc	gac	tgg	cag	gtc	atc	cgc	aag	gcc	7389
Arg	Pro	Val	Pro	Asp	Ser	Thr	Asp	Trp	Gln	Val	Ile	Arg	Lys	Ala	
	2450						2455				2460				
ggc	acc	gag	atc	cgg	gtg	ccg	cga	aag	acc	aag	ctg	tcc	cgc	gtc	7434
Gly	Thr	Glu	Ile	Arg	Val	Pro	Arg	Lys	Thr	Lys	Leu	Ser	Arg	Val	
	2465						2470				2475				
gtc	ggc	ggc	cag	atc	ccg	acc	ggg	ttc	gac	ccg	acg	gtg	tgg	ggc	7479
Val	Gly	Gly	Gln	Ile	Pro	Thr	Gly	Phe	Asp	Pro	Thr	Val	Trp	Gly	
	2480						2485				2490				
atc	agc	gca	gac	atg	gcc	ggt	tcc	atc	gac	cgg	ttg	gcg	gta	tgg	7524
Ile	Ser	Ala	Asp	Met	Ala	Gly	Ser	Ile	Asp	Arg	Leu	Ala	Val	Trp	
	2495						2500				2505				
aac	atg	tgg	cgg	acc	gtc	gac	cgg	ttc	ctg	tcg	tcc	ggt	ttc	agc	7569
Asn	Met	Trp	Arg	Thr	Val	Asp	Arg	Phe	Leu	Ser	Ser	Gly	Phe	Ser	
	2510						2515				2520				
ccg	gcc	gag	gtg	atg	cgt	tac	gtg	cac	ccg	agt	ttg	gtg	gcc	aac	7614
Pro	Ala	Glu	Val	Met	Arg	Tyr	Val	His	Pro	Ser	Leu	Val	Ala	Asn	
	2525						2530				2535				
acc	cag	ggc	acc	ggc	atg	ggc	ggc	ggc	acg	tcg	atg	cag	acg	atg	7659
Thr	Gln	Gly	Thr	Gly	Met	Gly	Gly	Gly	Thr	Ser	Met	Gln	Thr	Met	
	2540						2545				2550				
tac	cac	ggc	aat	ctg	ttg	ggc	cgc	aac	aag	ccg	aac	gac	atc	ttc	7704
Tyr	His	Gly	Asn	Leu	Leu	Gly	Arg	Asn	Lys	Pro	Asn	Asp	Ile	Phe	
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cag	gaa	gtc	ttg	ccg	ata	tca	ttc	gcc	gcg	cac	gtg	gtt	cag	tcc	7749
Gln	Glu	Val	Leu	Pro	Ile	Ser	Phe	Ala	Ala	His	Val	Val	Gln	Ser	
	2570						2575				2580				
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Tyr	Val	Gly	Ser	Tyr	Gly	Ala	Met	Ile	His	Pro	Val	Ala	Ala	Cys	
	2585						2590				2595				
gcc	acc	gcc	gcg	gtg	tcg	gtc	gag	gaa	ggt	gtc	gac	aag	atc	cgg	7839
Ala	Thr	Ala	Ala	Val	Ser	Val	Glu	Glu	Gly	Val	Asp	Lys	Ile	Arg	
	2600						2605				2610				
ttg	gga	agg	ctc	aac	tgg	tgg	tcg	gcg	gcc	gtg	gat	gac	ctg	acg	7884
Leu	Gly	Arg	Leu	Asn	Trp	Trp	Ser	Ala	Ala	Val	Asp	Asp	Leu	Thr	
	2615						2620				2625				
ctg	gag	ggc	atc	atc	gga	ttc	ggt	gac	atg	gcc	gcc	acc	gcc	gac	7929
Leu	Glu	Gly	Ile	Ile	Gly	Phe	Gly	Asp	Met	Ala	Ala	Thr	Ala	Asp	
	2630						2635				2640				
acg	tcc	atg	atg	cgc	ggc	cgc	ggc	atc	cac	gac	tcg	aag	ttt	tcc	7974
Thr	Ser	Met	Met	Arg	Gly	Arg	Gly	Ile	His	Asp	Ser	Lys	Phe	Ser	

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Arg Pro Asn Asp Arg Arg Arg	Leu Ala Ser Ser Lys	Pro Lys Ala	
2660	2665	2670	
gcg gga cga tcc tgt tgg gcg	cgg gga cct ggc gct	gcg gat ggg	8064
Ala Gly Arg Ser Cys Trp Ala	Arg Gly Pro Gly Ala	Ala Asp Gly	
2675	2680	2685	
gct gcc ggt gct ggc ggt ggt	ggg ttc gcg cag tcg	ttc ggc gac	8109
Ala Ala Gly Ala Gly Gly Gly	Gly Phe Ala Gln Ser	Phe Gly Asp	
2690	2695	2700	
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Gly Val His Thr Ser Ile Arg	Pro Gly Pro Gly Arg	Ala Gly Gly	
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Gly Ala Arg Arg Gln Gly Phe	Ser Cys Gly Gly Arg	Trp Pro Ser	
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Cys Val Ala Ala Asp Asp Val	Ala Val Ile Ser Lys	His Asp Thr	
2735	2740	2745	
tcg acg ctg gcc aac gat ccc	aac gag acc gag ttg	cat gaa cgg	8289
Ser Thr Leu Ala Asn Asp Pro	Asn Glu Thr Glu Leu	His Glu Arg	
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ctc gcc gac gcc ctg ggc cgt	tcc gag ggc gcc ccg	ctg ttc gtg	8334
Leu Ala Asp Ala Leu Gly Arg	Ser Glu Gly Ala Pro	Leu Phe Val	
2765	2770	2775	
gtg tcg cag aag agc ctg acc	ggc cag cca agg gcg	gcg cgg cgg	8379
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Ser Ser Arg			
2795			

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Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
85 90 95

Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
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Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr
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Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val
130 135 140

Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly
165 170 175

Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly
180 185 190

Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp
195 200 205

Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp
210 215 220

Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val
225 230 235 240

His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile
245 250 255

Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile
260 265 270

Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly
275 280 285

Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val
290 295 300

Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg
305 310 315 320

Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr
325 330 335

Val Asp Ala Lys Ile Val Ala Ala Ala Ala Asn Gly Arg His Trp Ala
340 345 350

Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala
355 360 365

Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser
370 375 380

Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln
385 390 395 400

Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Arg Asp Arg Arg Arg
405 410 415

Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp
420 425 430

Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg
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Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala
450 455 460

His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly
465 470 475 480

Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala
485 490 495

Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly Gly His Leu
500 505 510

Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser
515 520 525

Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala
530 535 540

Ala Met Ala Thr Lys Glu Ser Thr Thr Ser Pro Ser Val Lys Arg Met
 545 550 555 560

Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala
 565 570 575

Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg
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Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val
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Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro
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Thr Cys Arg Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala
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Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro
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Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala
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Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro
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Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala
 690 695 700

Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln
 705 710 715 720

Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu
 725 730 735

Gly Lys Pro Val Asn Phe Val Pro Ala Ile Asp Leu Val Val Arg Ala
 740 745 750

Gly Gly Ala Ala Thr Arg Cys Gly Arg Pro Thr Thr Pro Ala Thr Thr
 755 760 765

Pro Met Arg Cys Ala Ser Phe Arg Ala Arg Val Gly Ser Arg Ile Thr
 770 775 780

Arg Met Asp Glu Pro Val Gly Glu Leu Leu Asp Ala Phe Glu Gln Ala
785 790 795 800

Ala Ile Asp Glu Val Leu Gly Ala Gly Val Glu Pro Lys Asp Val Ala
805 810 815

Ser Gly Arg Leu Gly Arg Ala Asp Val Ala Gly Pro Leu Ala Val Val
820 825 830

Leu Asp Ala Pro Asp Val Arg Trp Ala Gly Arg Thr Val Thr Asn Pro
835 840 845

Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro
850 855 860

Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr
865 870 875 880

His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly
885 890 895

Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro
900 905 910

Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg
915 920 925

Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg
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Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro
945 950 955 960

His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn
965 970 975

Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala
980 985 990

Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu
995 1000 1005

Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln
1010 1015 1020

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Thr Gln	Pro Ile	Arg Thr	Trp	Ala Ala	Ser Cys	Arg	Ser Arg	Ser
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Ser Phe	Thr Ala	Trp Arg	Arg	Asp Arg	His Ser	Arg	Gly Ala	Ile
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Arg Asp	Pro Gly	Ser His	Arg	Phe Ala	Glu Leu	Asp	Arg Arg	Glu
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Pro Val	Ala Arg	Cys Arg	Glu	Arg His	Arg His	Pro	Ala Arg	Arg
1085			1090			1095		
Arg Arg	Asp Val	Thr Ile	Thr	Ala Pro	Val Asp	Met	Arg Pro	Phe
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Ala Val	Val Ser	Gly Asp	His	Asn Pro	Ile His	Thr	Asp Arg	Ala
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Ala Val	Gly Arg	Gly Ala	Thr	Arg Gly	Asp Arg	His	Arg Arg	Ala
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Gly Pro	Pro Pro	Ala Arg	Leu	Val Gly	Trp Thr	Ala	Arg Phe	Leu
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Gly Met	Val Ala	Pro Ala	Thr	Arg Trp	Thr Ser	Gly	Arg Ala	Arg
1175			1180			1185		
Arg Ile	Asp Gln	Gly Ala	Glu	Ile Val	Asp Val	Ala	Ala Arg	Val
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Gly Ser	Asp Leu	Val Met	Ser	Ala Ser	Ala Arg	Leu	Ala Ala	Pro
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Lys Thr	Val Tyr	Ala Phe	Pro	Gly Gln	Gly Ile	Gln	His Lys	Gly
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Met Gly	Met Glu	Val Arg	Ala	Ala Pro	Arg Arg	Pro	Ala Arg	Cys
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Tyr Cys	Thr Trp Ser Ala Thr	Thr Arg Pro Ala Ser	Ser Pro Ala
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Val Cys	Thr Thr Thr Thr Asp	Gly Val Leu Tyr Leu	Thr Gln Phe
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Thr Gln	Val Ala Met Ala Thr	Val Ala Ala Gly Gln	Val Ala Glu
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Met Arg	Glu Gln Gly Ala Phe	Val Glu Gly Ala Ile	Ala Cys Gly
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His Ser	Val Gly Glu Tyr Thr	Ala Leu Ala Cys Val	Thr Gly Ile
1325	1330	1335	
Tyr Gln	Leu Glu Ala Leu Leu	Glu Met Val Phe His	Arg Gly Ser
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Lys Met	His Asp Ile Val Pro	Arg Asp Glu Leu Gly	Arg Ser Asn
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Tyr Arg	Leu Ser Ala Ile Arg	Pro Ser Gln Ile Asp	Leu Asp Asp
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Ala Asp	Val Pro Ala Phe Val	Ala Gly Ile Ala Glu	Ser Thr Gly
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Glu Phe	Leu Glu Ile Glu Asn	Phe Asn Leu Gly Gly	Ser Gln Tyr
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Ala Ile	Ala Gly Thr Val Arg	Gly Leu Glu Ala Leu	Glu Ala Glu
1415	1420	1425	
Val Glu	Arg Arg Arg Glu Leu	Thr Gly Gly Arg Arg	Ser Phe Ile
1430	1435	1440	
Leu Val	Pro Gly Ile Asp Val	Pro Phe His Ser Arg	Val Leu Arg
1445	1450	1455	
Val Gly	Val Ala Glu Phe Arg	Arg Ser Leu Asp Arg	Val Met Arg
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Pro Thr	Arg Thr Arg	Pro Asp	His Arg Ala Leu	His Ser Gln Pro
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Gly Ala	Ala Glu Val Gln	Pro Trp Thr Ala Thr	Ser Ser Arg Lys	
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Ser Gly	Ile Trp Cys Pro	Ala Glu Pro Leu Asp	Glu Ile Leu Ala	
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Asp Tyr	Asp Thr Trp Leu Arg	Asp Asp Arg Arg	Asp Gly Ala His	
1520		1525	1530	
Gly Val	His Arg Ala Ala	Gly Met Ala Ile Arg	Gln Pro Gly Ala	
1535		1540	1545	
Leu Asp	Arg Asp Ala Gly	Ser Ala Val His Arg	Gly Gly Ala Gly	
1550		1555	1560	
Gly Leu	Gly Val Glu Arg	Phe Val Glu Ile Gly	Val Lys Ser Ser	
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Pro Thr	Val Ala Gly Ser	Cys His Gln His Pro	Gln Thr Ala Arg	
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Ile Arg	Pro Gln His Ser	Glu Val Leu Asn Ala	Glu Arg Asp Ala	
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Arg Cys	Cys Ser Pro Pro	Thr Pro Thr Arg Ser	Arg Ser Arg Arg	
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Lys Thr	Ser Arg Ser Arg	Asn Arg Pro Arg Arg	Thr Ser Ser Arg	
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Lys Pro	Pro Pro Ser Arg	Arg Pro Leu Arg Arg	Arg Ala Arg Val	
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Pro Thr	Ile Trp Phe Ser	Thr Pro Pro Met Pro	Arg Cys Val Ile	
1655		1660	1665	
Ala Leu	Ser Ala Lys Met	Arg Ile Asp Gln Ile	Glu Glu Leu Asp	
1670		1675	1680	
Ser Ile	Glu Ser Ile Thr	Asp Gly Ala Ser Ser	Arg Arg Asn Gln	
1685		1690	1695	

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1715						1720					1725			
Gln	Thr	Gly	Ala	His	Leu	Gln	Arg	Tyr	Gly	Pro	Val	Leu	Ser	Asp
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Ala	Ile	Asn	Asp	His	Val	Arg	Thr	Val	Leu	Gly	Pro	Ser	Gly	Lys
1745						1750					1755			
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Val	Thr	Ala	Glu	Leu	Gly	Arg	Thr	Gly	Arg	Gly	Trp	Trp	His	Arg
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Cys	Ser	Thr	Pro	Arg	Arg	Pro	Ser	Tyr	Ser	Thr	Thr	Ala	Gly	Gln
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Glu Gly 1955	Ala Ala Thr Ser Trp 1960	Arg Pro Arg Leu Pro 1965	Gly Gly Lys
Val Ser 1970	Arg Ser Arg Gly Pro 1975	Ala Asp Pro Cys Ile 1980	Ala Val Arg
Pro His 1985	Ala Ala Gly Ala Glu 1990	Asn Pro Glu Pro Arg 1995	Val Arg Arg
Arg Ser 2000	Cys Arg Gly Asp Arg 2005	Arg Phe Glu Gly Phe 2010	Asp Arg Arg
Val Gly 2015	Gly Gly Ser Ala Ala 2020	Arg Arg Gly Ala Thr 2025	Val Ile Ala
Thr Thr 2030	Ser Lys Leu Asp Glu 2035	Glu Arg Leu Arg Phe 2040	Tyr Arg Thr
Leu Tyr 2045	Arg Asp His Ala Arg 2050	Tyr Gly Ala Ala Leu 2055	Trp Leu Val
Ala Ala 2060	Asn Met Ala Ser Tyr 2065	Ser Asp Val Asp Ala 2070	Leu Val Glu
Trp Ile 2075	Gly Thr Glu Gln Thr 2080	Glu Ser Leu Gly Pro 2085	Gln Ser Ile
His Ile 2090	Lys Asp Ala Gln Thr 2095	Pro Thr Leu Leu Phe 2100	Arg Ser Arg
Arg Thr 2105	Arg Val Gly Thr Val 2110	Gly Gly Arg Phe Ala 2115	Arg Arg Asp
Gly Asp 2120	Glu Ser Ala Ala Val 2125	Ala Val Gln Arg Leu 2130	Ile Gly Gly
Leu Ser 2135	Thr Ile Gly Ala Glu 2140	Arg Asp Met Pro Ser 2145	Arg Leu Glu

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Ala Leu	Ala Arg Arg Val Val	Leu Gly Gly Thr Gly	Gln Pro Gly
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Ala Arg	Ala His Arg Leu Asp	Pro Arg His Arg Ala	Asp Gly Pro
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Gln Arg	Cys His Arg Gly Arg	Arg Arg Arg Gly Arg	Gly His His
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2255	2260	2265	
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Arg Thr	Pro Arg Pro Leu Ala	Pro Ser Pro Arg Cys	Arg Arg Arg
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Gly Pro	Tyr Gly Ser Ser Arg	Thr Arg Phe Glu Met	Glu Val Glu
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Asn Glu	Leu Ser Ala Ala Gly	Val Leu Glu Leu Ala	Trp Thr Thr
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Gly Leu	Ile Ala Gly Arg Arg	Pro Ala Thr Arg Leu	Val Arg His
2360	2365	2370	

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His Asp 2390	Ala Val Val Gln Arg 2395	Val Gly Ile Arg Glu 2400	Phe Val Asp
Asp Gly 2405	Ala Ile Asp Pro Asp 2410	His Ala Ser Pro Leu 2415	Leu Val Ser
Val Phe 2420	Leu Glu Lys Asp Phe 2425	Ala Phe Val Val Ser 2430	Ser Glu Ala
Asp Ala 2435	Arg Ala Phe Val Glu 2440	Phe Asp Pro Glu His 2445	Thr Val Ile
Arg Pro 2450	Val Pro Asp Ser Thr 2455	Asp Trp Gln Val Ile 2460	Arg Lys Ala
Gly Thr 2465	Glu Ile Arg Val Pro 2470	Arg Lys Thr Lys Leu 2475	Ser Arg Val
Val Gly 2480	Gly Gln Ile Pro Thr 2485	Gly Phe Asp Pro Thr 2490	Val Trp Gly
Ile Ser 2495	Ala Asp Met Ala Gly 2500	Ser Ile Asp Arg Leu 2505	Ala Val Trp
Asn Met 2510	Trp Arg Thr Val Asp 2515	Arg Phe Leu Ser Ser 2520	Gly Phe Ser
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Tyr His 2555	Gly Asn Leu Leu Gly 2560	Arg Asn Lys Pro Asn 2565	Asp Ile Phe
Gln Glu 2570	Val Leu Pro Ile Ser 2575	Phe Ala Ala His Val 2580	Val Gln Ser
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Cys Val Ala Ala Asp Asp Val Ala Val Ile Ser Lys His Asp Thr
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2750 2755 2760

Leu Ala Asp Ala Leu Gly Arg Ser Glu Gly Ala Pro Leu Phe Val
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 Cys Thr Gly Thr Asp Met Lys Leu Arg Leu Pro Ala Ser Pro Glu Thr
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 His Leu Asp Met Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln
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 Gly Asn Leu Glu Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe
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Gln Leu Phe Glu Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp	
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440

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915

920

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Cys Gly Pro Gly Ile Asp Ile Arg Asn Asp Tyr Gln Gln Leu Lys Arg
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Leu Glu Asn Cys Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile
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Ser Lys Ala Glu Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val
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Ile Thr Glu Tyr Leu Leu Leu Phe Arg Val Ala Gly Leu Glu Ser Leu
 85 90 95

Gly Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe
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Tyr Asn Tyr Ala Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile
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Cys Thr Ile Phe Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn
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Asn Ile Ala Ser Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val
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Thr Gly Tyr Val Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser
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Phe Leu Lys Asn Leu Arg Leu Ile Leu Gly Glu Glu Gln Leu Glu Gly
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Asn Tyr Ser Phe Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp
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Asp Trp Asp His Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe
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Ala Phe Asn Pro Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu
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Asn Asn Gly Glu Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr
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Ser Thr Thr Thr Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr
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Arg Pro Pro Asp Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys
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Glu Ala Pro Phe Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys
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Gly Ser Asn Ser Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys
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Asp Val Glu Pro Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln
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Tyr Ala Val Tyr Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp
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His Ile Arg Gly Ala Lys Ser Glu Ile Leu Tyr Ile Arg Thr Asn Ala
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Ser Val Pro Ser Ile Pro Leu Asp Val Leu Ser Ala Ser Asn Ser Ser
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Ser Gln Leu Ile Val Lys Trp Asn Pro Pro Ser Leu Pro Asn Gly Asn
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Leu Ser Tyr Tyr Ile Val Arg Trp Gln Arg Gln Pro Gln Asp Gly Tyr
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Leu Tyr Arg His Asn Tyr Cys Ser Lys Asp Lys Ile Pro Ile Arg Lys
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Tyr Ala Asp Gly Thr Ile Asp Ile Glu Glu Val Thr Glu Asn Pro Lys
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Val Phe Glu Asn Phe Leu His Asn Ser Ile Phe Val Pro Arg Pro Glu
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Arg Ser Arg Asn Thr Thr Ala Ala Asp Thr Tyr Asn Ile Thr Asp Pro
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Glu Glu Leu Glu Thr Glu Tyr Pro Phe Phe Glu Ser Arg Val Asp Asn
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Lys Glu Arg Thr Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg
785 790 795 800

Ile Asp Ile His Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser
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Asp Ile Pro Gly Pro Val Thr Trp Glu Pro Arg Pro Glu Asn Ser Ile
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Phe Leu Lys Trp Pro Glu Pro Glu Asn Pro Asn Gly Leu Ile Leu Met
850 855 860

Tyr Glu Ile Lys Tyr Gly Ser Gln Val Glu Asp Gln Arg Glu Cys Val
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Ser Arg Gln Glu Tyr Arg Lys Tyr Gly Gly Ala Lys Leu Asn Arg Leu
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Asn Pro Gly Asn Tyr Thr Ala Arg Ile Gln Ala Thr Ser Leu Ser Gly
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Glu Val Ala Arg Glu Lys Ile Thr Met Ser Arg Glu Leu Gly Gln Gly
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Ser Phe Gly Met Val Tyr Glu Gly Val Ala Lys Gly Val Val Lys
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Glu Asn Asn Pro Val Leu Ala Pro Pro Ser Leu Ser Lys Met Ile
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Gln Met Ala Gly Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala
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Asn Lys Phe Val His Arg Asp Leu Ala Ala Arg Asn Cys Met Val
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Ala Leu Leu Leu Tyr Leu His His Ala Lys Trp Ser Gln Ala Ala Pro
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Met Ala Glu Gly Gly Gly Gln Asn His His Glu Val Val Lys Phe Met

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Asp Val Tyr Gln Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp			
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Ile Phe Gln Glu Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser			
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Cys Val Pro Leu Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu			
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gag tgt gtg ccc act gag gag tcc aac atc acc atg cag att atg cgg			340
Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg			
	95	100	105
atc aaa cct cac caa ggc cag cac ata gga gag atg agc ttc cta cag			388
Ile Lys Pro His Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln			
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His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu			
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Asn Pro Cys Gly Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln			
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Asp Pro Gln Thr Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys			
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Gly Gly Gln Asn His His Glu Val Val Lys Phe Met Asp Val Tyr Gln			
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Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp Ile Phe Gln Glu			

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55

60

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Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu Asn Pro Cys Gly
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Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln Asp Pro Gln Thr
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Met Ala Cys Pro Trp Lys Phe Leu Phe Lys Val Lys
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Ser Tyr Gln Ser Asp Leu Lys Glu Glu Lys Asp Ile Asn Asn Asn Val
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Lys Lys Thr Pro Cys Ala Val Leu Ser Pro Thr Ile Gln Asp Asp Pro
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Asn	Val	Pro	Glu	Ser	Leu	Asp	Lys	Leu	His	Val	Thr	Ser	Thr	Arg	Pro	
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Gln	Tyr	Val	Arg	Ile	Lys	Asn	Trp	Gly	Ser	Gly	Glu	Ile	Leu	His	Asp	
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Thr	Leu	His	His	Lys	Ala	Thr	Ser	Asp	Phe	Thr	Cys	Lys	Ser	Lys	Ser	
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Cys	Leu	Gly	Ser	Ile	Met	Asn	Pro	Lys	Ser	Leu	Thr	Arg	Gly	Pro	Arg	
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Tyr	Gln	Leu	Thr	Leu	Asp	Glu	Leu	Ile	Phe	Ala	Thr	Lys	Met	Ala	Trp	
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Arg	Asn	Ala	Pro	Arg	Cys	Ile	Gly	Arg	Ile	Gln	Trp	Ser	Asn	Leu	Gln	
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Val	Phe	Asp	Ala	Arg	Asn	Cys	Ser	Thr	Ala	Gln	Glu	Met	Phe	Gln	His	
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Ile	Cys	Arg	His	Ile	Leu	Tyr	Ala	Thr	Asn	Asn	Gly	Asn	Ile	Arg	Ser	
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Ala	Ile	Thr	Val	Phe	Pro	Gln	Arg	Ser	Asp	Gly	Lys	His	Asp	Phe	Arg	
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Leu	Trp	Asn	Ser	Gln	Leu	Ile	Arg	Tyr	Ala	Gly	Tyr	Gln	Met	Pro	Asp	
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Pro Asp Leu Val Leu Glu Val Thr Met Glu His Pro Lys Tyr Glu Trp	
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Phe Gln Glu Leu Gly Leu Lys Trp Tyr Ala Leu Pro Ala Val Ala Asn	
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Gln Arg Tyr Asn Ile Leu Glu Glu Val Gly Arg Arg Met Gly Leu Glu	
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		380			385					390					395		
cag	tgg	ctg	aaa	cgt	gtg	cat	gcc	aac	ccc	ctt	ctg	ata	gat	gtg	gtc	1311	
Gln	Trp	Leu	Lys	Arg	Val	His	Ala	Asn	Pro	Leu	Leu	Ile	Asp	Val	Val		
				400					405					410			
acc	tac	ctg	gtg	gcc	ctg	atc	ccc	gag	ccc	tca	gca	cag	cag	ctg	cga	1359	
Thr	Tyr	Leu	Val	Ala	Leu	Ile	Pro	Glu	Pro	Ser	Ala	Gln	Gln	Leu	Arg		
			415					420					425				
gag	atc	ttc	aac	atg	gcg	agg	gat	cag	cgc	agc	cga	gcc	acc	ttg	tat	1407	
Glu	Ile	Phe	Asn	Met	Ala	Arg	Asp	Gln	Arg	Ser	Arg	Ala	Thr	Leu	Tyr		
		430					435					440					
gcg	ctg	agc	cac	gcg	gtc	aac	aac	tat	cat	aag	aca	aac	cct	aca	ggg	1455	
Ala	Leu	Ser	His	Ala	Val	Asn	Asn	Tyr	His	Lys	Thr	Asn	Pro	Thr	Gly		
		445				450					455						
acc	cag	gag	ctg	ctg	gac	att	gct	aat	tac	ctg	atg	gaa	cag	att	caa	1503	
Thr	Gln	Glu	Leu	Leu	Asp	Ile	Ala	Asn	Tyr	Leu	Met	Glu	Gln	Ile	Gln		
		460			465					470					475		
gat	gac	tgc	act	ggg	gat	gaa	gat	tac	acc	tat	ttg	att	ctg	cgg	gtc	1551	
Asp	Asp	Cys	Thr	Gly	Asp	Glu	Asp	Tyr	Thr	Tyr	Leu	Ile	Leu	Arg	Val		
				480					485					490			
att	gga	aat	atg	ggc	caa	acc	atg	gag	cag	tta	act	cca	gaa	ctc	aag	1599	
Ile	Gly	Asn	Met	Gly	Gln	Thr	Met	Glu	Gln	Leu	Thr	Pro	Glu	Leu	Lys		
			495					500					505				
tct	tca	atc	ctg	aaa	tgt	gtc	caa	agt	aca	aag	cca	tca	ctg	atg	atc	1647	
Ser	Ser	Ile	Leu	Lys	Cys	Val	Gln	Ser	Thr	Lys	Pro	Ser	Leu	Met	Ile		
		510					515					520					
cag	aaa	gct	gcc	atc	cag	gct	ctg	cgg	aaa	atg	gag	cct	aaa	gac	aag	1695	
Gln	Lys	Ala	Ala	Ile	Gln	Ala	Leu	Arg	Lys	Met	Glu	Pro	Lys	Asp	Lys		
		525				530					535						
gac	cag	gag	gtt	ctt	ctt	cag	act	ttc	ctt	gat	gat	gct	tct	ccg	gga	1743	
Asp	Gln	Glu	Val	Leu	Leu	Gln	Thr	Phe	Leu	Asp	Asp	Ala	Ser	Pro	Gly		
		540			545					550					555		
gat	aag	cga	ctg	gct	gcc	tat	ctt	atg	ttg	atg	agg	agt	cct	tca	cag	1791	
Asp	Lys	Arg	Leu	Ala	Ala	Tyr	Leu	Met	Leu	Met	Arg	Ser	Pro	Ser	Gln		
				560				565					570				
gca	gat	att	aac	aaa	att	gtc	caa	att	cta	cca	tgg	gaa	cag	aat	gag	1839	
Ala	Asp	Ile	Asn	Lys	Ile	Val	Gln	Ile	Leu	Pro	Trp	Glu	Gln	Asn	Glu		
			575				580						585				
caa	gtg	aag	aac	ttt	gtg	gct	tcc	cat	att	gcc	aat	atc	ttg	aac	tca	1887	

Gln Val Lys Asn Phe Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser	
590	595 600
gaa gaa ttg gat atc caa gat ctg aaa aag tta gtg aaa gaa gtt ctg	1935
Glu Glu Leu Asp Ile Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu	
605 610 615	
aaa gaa tct caa ctt cca act gtc atg gac ttc aga aaa ttc tct cgg	1983
Lys Glu Ser Gln Leu Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg	
620 625 630 635	
aac tat caa ctc tac aaa tct gtt tct att cca tca ctt gac cca gcc	2031
Asn Tyr Gln Leu Tyr Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala	
640 645 650	
tca gcc aaa ata gaa ggg aat ctt ata ttt gat cca aat aac tac ctt	2079
Ser Ala Lys Ile Glu Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu	
655 660 665	
cct aaa gaa agc atg ctg aaa act acc ctc act gcc ttt gga ttt gct	2127
Pro Lys Glu Ser Met Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala	
670 675 680	
tca gct gac ctc atc gag att ggc ttg gaa gga aaa ggc ttt gag cca	2175
Ser Ala Asp Leu Ile Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro	
685 690 695	
aca ttg gaa gct ctt ttt ggg aag caa gga ttt ttc cca gac agt gtc	2223
Thr Leu Glu Ala Leu Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val	
700 705 710 715	
aac aaa gct ttg tac tgg gtt aat ggt caa gtt cct gat ggt gtc tct	2271
Asn Lys Ala Leu Tyr Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser	
720 725 730	
aag gtc tta gtg gac cac ttt ggc tat acc aaa gat gat aaa cat gag	2319
Lys Val Leu Val Asp His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu	
735 740 745	
cag gat atg gta aat gga ata atg ctc agt gtt gag aag ctg att aaa	2367
Gln Asp Met Val Asn Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys	
750 755 760	
gat ttg aaa tcc aaa gaa gtc ccg gaa gcc aga gcc tac ctc cgc atc	2415
Asp Leu Lys Ser Lys Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile	
765 770 775	
ttg gga gag gag ctt ggt ttt gcc agt ctc cat gac ctc cag ctc ctg	2463
Leu Gly Glu Glu Leu Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu	
780 785 790 795	
gga aag ctg ctt ctg atg ggt gcc cgc act ctg cag ggg atc ccc cag	2511
Gly Lys Leu Leu Leu Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln	
800 805 810	
atg att gga gag gtc atc agg aag ggc tca aag aat gac ttt ttt ctt	2559
Met Ile Gly Glu Val Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu	
815 820 825	
cac tac atc ttc atg gag aat gcc ttt gaa ctc ccc act gga gct gga	2607

His Tyr Ile Phe Met Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly	
830	835 840
tta cag ttg caa ata tct tca tct gga gtc att gct ccc gga gcc aag	2655
Leu Gln Leu Gln Ile Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys	
845	850 855
gct gga gta aaa ctg gaa gta gcc aac atg cag gct gaa ctg gtg gca	2703
Ala Gly Val Lys Leu Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala	
860	865 870 875
aaa ccc tcc gtg tct gtg gag ttt gtg aca aat atg ggc atc atc att	2751
Lys Pro Ser Val Ser Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile	
	880 885 890
ccg gac ttc gct agg agt ggg gtc cag atg aac acc aac ttc ttc cac	2799
Pro Asp Phe Ala Arg Ser Gly Val Gln Met Asn Thr Asn Phe Phe His	
	895 900 905
gag tcg ggt ctg gag gct cat gtt gcc cta aaa cct ggg aag ctg aag	2847
Glu Ser Gly Leu Glu Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys	
	910 915 920
ttt atc att cct tcc cca aag aga cca gtc aag ctg ctc agt gga ggc	2895
Phe Ile Ile Pro Ser Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly	
	925 930 935
aac aca tta cat ttg gtc tct acc acc aaa acg gag gtg atc cca cct	2943
Asn Thr Leu His Leu Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro	
	940 945 950 955
ctc att gag aac agg cag tcc tgg tca gtt tgc aag caa gtc ttt cct	2991
Leu Ile Glu Asn Arg Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro	
	960 965 970
ggc ctg aat tac tgc acc tca ggc gct tac tcc aac gcc agc tcc aca	3039
Gly Leu Asn Tyr Cys Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr	
	975 980 985
gac tcc gcc tcc tac tat ccg ctg acc ggg gac acc aga tta gag ctg	3087
Asp Ser Ala Ser Tyr Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu	
	990 995 1000
gaa ctg agg cct aca gga gag att gag cag tat tct gtc agc gca	3132
Glu Leu Arg Pro Thr Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala	
	1005 1010 1015
acc tat gag ctc cag aga gag gac aga gcc ttg gtg gat acc ctg	3177
Thr Tyr Glu Leu Gln Arg Glu Asp Arg Ala Leu Val Asp Thr Leu	
	1020 1025 1030
aag ttt gta act caa gca gaa ggt gcg aag cag act gag gct acc	3222
Lys Phe Val Thr Gln Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr	
	1035 1040 1045
atg aca ttc aaa tat aat cgg cag agt atg acc ttg tcc agt gaa	3267
Met Thr Phe Lys Tyr Asn Arg Gln Ser Met Thr Ser Ser Glu	
	1050 1055 1060
gtc caa att ccg gat ttt gat gtt gac ctc gga aca atc ctc aga	3312

Val Gln Ile Pro Asp Phe Asp	Val Asp Leu Gly Thr	Ile Leu Arg	
1065	1070	1075	
gtt aat gat gaa tct act gag	ggc aaa acg tct tac	aga ctc acc	3357
Val Asn Asp Glu Ser Thr	Gly Lys Thr Ser Tyr	Arg Leu Thr	
1080	1085	1090	
ctg gac att cag aac aag aaa	att act gag gtc gcc	ctc atg ggc	3402
Leu Asp Ile Gln Asn Lys Lys	Ile Thr Glu Val Ala	Leu Met Gly	
1095	1100	1105	
cac cta agt tgt gac aca aag	gaa gaa aga aaa atc	aag ggt gtt	3447
His Leu Ser Cys Asp Thr Lys	Glu Glu Arg Lys Ile	Lys Gly Val	
1110	1115	1120	
att tcc ata ccc cgt ttg caa	gca gaa gcc aga agt	gag atc ctc	3492
Ile Ser Ile Pro Arg Leu Gln	Ala Glu Ala Arg Ser	Glu Ile Leu	
1125	1130	1135	
gcc cac tgg tcg cct gcc aaa	ctg ctt ctc caa atg	gac tca tct	3537
Ala His Trp Ser Pro Ala Lys	Leu Leu Leu Gln Met	Asp Ser Ser	
1140	1145	1150	
gct aca gct tat ggc tcc aca	gtt tcc aag agg gtg	gca tgg cat	3582
Ala Thr Ala Tyr Gly Ser Thr	Val Ser Lys Arg Val	Ala Trp His	
1155	1160	1165	
tat gat gaa gag aag att gaa	ttt gaa tgg aac aca	ggc acc aat	3627
Tyr Asp Glu Glu Lys Ile Glu	Phe Glu Trp Asn Thr	Gly Thr Asn	
1170	1175	1180	
gta gat acc aaa aaa atg act	tcc aat ttc cct gtg	gat ctc tcc	3672
Val Asp Thr Lys Lys Met Thr	Ser Asn Phe Pro Val	Asp Leu Ser	
1185	1190	1195	
gat tat cct aag agc ttg cat	atg tat gct aat aga	ctc ctg gat	3717
Asp Tyr Pro Lys Ser Leu His	Met Tyr Ala Asn Arg	Leu Leu Asp	
1200	1205	1210	
cac aga gtc cct caa aca gac	atg act ttc cgg cac	gtg ggt tcc	3762
His Arg Val Pro Gln Thr Asp	Met Thr Phe Arg His	Val Gly Ser	
1215	1220	1225	
aaa tta ata gtt gca atg agc	tca tgg ctt cag aag	gca tct ggg	3807
Lys Leu Ile Val Ala Met Ser	Ser Trp Leu Gln Lys	Ala Ser Gly	
1230	1235	1240	
agt ctt cct tat acc cag act	ttg caa gac cac ctc	aat agc ctg	3852
Ser Leu Pro Tyr Thr Gln Thr	Leu Gln Asp His Leu	Asn Ser Leu	
1245	1250	1255	
aag gag ttc aac ctc cag aac	atg gga ttg cca gac	ttc cac atc	3897
Lys Glu Phe Asn Leu Gln Asn	Met Gly Leu Pro Asp	Phe His Ile	
1260	1265	1270	
cca gaa aac ctc ttc tta aaa	agc gat ggc cgg gtc	aaa tat acc	3942
Pro Glu Asn Leu Phe Leu Lys	Ser Asp Gly Arg Val	Lys Tyr Thr	
1275	1280	1285	
ttg aac aag aac agt ttg aaa	att gag att cct ttg	cct ttt ggt	3987

Leu Asn 1290	Lys Asn Ser Leu 1295	Ile Glu Ile Pro Leu 1300	Pro Phe Gly	
ggc aaa Gly Lys 1305	tcc tcc aga gat cta Ser Ser Arg Asp Leu 1310	aag atg tta gag act Lys Met Leu Glu Thr 1315	ggt agg aca Val Arg Thr	4032
cca gcc Pro Ala 1320	ctc cac ttc aag tct Leu His Phe Lys Ser 1325	gtg gga ttc cat ctg Val Gly Phe His Leu 1330	cca tct cga Pro Ser Arg	4077
gag ttc Glu Phe 1335	caa gtc cct act ttt Gln Val Pro Thr Phe 1340	acc att ccc aag ttg Thr Ile Pro Lys Leu 1345	tat caa ctg Tyr Gln Leu	4122
caa gtg Gln Val 1350	cct ctc ctg ggt gtt Pro Leu Leu Gly Val 1355	cta gac ctc tcc acg Leu Asp Leu Ser Thr 1360	aat gtc tac Asn Val Tyr	4167
agc aac Ser Asn 1365	ttg tac aac tgg tcc Leu Tyr Asn Trp Ser 1370	gcc tcc tac agt ggt Ala Ser Tyr Ser Gly 1375	ggc aac acc Gly Asn Thr	4212
agc aca Ser Thr 1380	gac cat ttc agc ctt Asp His Phe Ser Leu 1385	cgg gct cgt tac cac Arg Ala Arg Tyr His 1390	atg aag gct Met Lys Ala	4257
gac tct Asp Ser 1395	gtg gtt gac ctg ctt Val Val Asp Leu Leu 1400	tcc tac aat gtg caa Ser Tyr Asn Val Gln 1405	gga tct gga Gly Ser Gly	4302
gaa aca Glu Thr 1410	aca tat gac cac aag Thr Tyr Asp His Lys 1415	aat acg ttc aca cta Asn Thr Phe Thr Leu 1420	tca tgt gat Ser Cys Asp	4347
ggg tct Gly Ser 1425	cta cgc cac aaa ttt Leu Arg His Lys Phe 1430	cta gat tcg aat atc Leu Asp Ser Asn Ile 1435	aaa ttc agt Lys Phe Ser	4392
cat gta His Val 1440	gaa aaa ctt gga aac Glu Lys Leu Gly Asn 1445	aac cca gtc tca aaa Asn Pro Val Ser Lys 1450	ggt tta cta Gly Leu Leu	4437
ata ttc Ile Phe 1455	gat gca tct agt tcc Asp Ala Ser Ser Ser 1460	tgg gga cca cag atg Trp Gly Pro Gln Met 1465	tct gct tca Ser Ala Ser	4482
gtt cat Val His 1470	ttg gac tcc aaa aag Leu Asp Ser Lys Lys 1475	aaa cag cat ttg ttt Lys Gln His Leu Phe 1480	gtc aaa gaa Val Lys Glu	4527
gtc aag Val Lys 1485	att gat ggg cag ttc Ile Asp Gly Gln Phe 1490	aga gtc tct tcg ttc Arg Val Ser Ser Phe 1495	tat gct aaa Tyr Ala Lys	4572
ggc aca Gly Thr 1500	tat ggc ctg tct tgt Tyr Gly Leu Ser Cys 1505	cag agg gat cct aac Gln Arg Asp Pro Asn 1510	act ggc cgg Thr Gly Arg	4617
ctc aat	gga gag tcc aac ctg	agg ttt aac tcc tcc	tac ctc caa	4662

Leu Asn 1515	Gly Glu Ser Asn 1520	Leu Arg Phe Asn Ser Ser 1525	Tyr Leu Gln	
ggc acc Gly Thr 1530	aac cag ata aca Asn Gln Ile Thr 1535	gga aga tat gaa gat Gly Arg Tyr Glu Asp 1540	gga acc ctc tcc Gly Thr Leu Ser	4707
ctc acc Leu Thr 1545	tcc acc tct gat Ser Thr Ser Asp 1550	ctg caa agt ggc atc Leu Gln Ser Gly Ile 1555	att aaa aat act Ile Lys Asn Thr	4752
gct tcc Ala Ser 1560	cta aag tat gag Leu Lys Tyr Glu 1565	aac tac gag ctg act Asn Tyr Glu Leu Thr 1570	tta aaa tct gac Leu Lys Ser Asp	4797
acc aat Thr Asn 1575	ggg aag tat aag Gly Lys Tyr Lys 1580	aac ttt gcc act tct Asn Phe Ala Thr Ser 1585	aag atg gat Lys Met Asp	4842
atg acc Met Thr 1590	ttc tct aag caa Phe Ser Lys Gln 1595	aat gca ctg ctg cgt Asn Ala Leu Leu Arg 1600	tct gaa tat cag Ser Glu Tyr Gln	4887
gct gat Ala Asp 1605	tac gag tca ttg Tyr Glu Ser Leu 1610	agg ttc ttc agc ctg Arg Phe Phe Ser Leu 1615	ctt tct gga tca Leu Ser Gly Ser	4932
cta aat Leu Asn 1620	tcc cat ggt ctt Ser His Gly Leu 1625	gag tta aat gct gac Glu Leu Asn Ala Asp 1630	atc tta ggc act Ile Leu Gly Thr	4977
gac aaa Asp Lys 1635	att aat agt ggt Ile Asn Ser Gly 1640	gct cac aag gcg aca Ala His Lys Ala Thr 1645	cta agg att ggc Leu Arg Ile Gly	5022
caa gat Gln Asp 1650	gga ata tct acc Gly Ile Ser Thr 1655	agt gca acg acc aac Ser Ala Thr Thr Asn 1660	ttg aag tgt agt Leu Lys Cys Ser	5067
ctc ctg Leu Leu 1665	gtg ctg gag aat Val Leu Glu Asn 1670	gag ctg aat gca gag Glu Leu Asn Ala Glu 1675	ctt ggc ctc tct Leu Gly Leu Ser	5112
ggg gca Gly Ala 1680	tct atg aaa tta Ser Met Lys Leu 1685	aca gca aat ggc cgc Thr Asn Gly Arg 1690	ttc agg gaa cac Phe Arg Glu His	5157
aat gca Asn Ala 1695	aaa ttc agt ctg Lys Phe Ser Leu 1700	gat ggg aaa gcc gcc Asp Gly Lys Ala Ala 1705	ctc aca gag cta Leu Thr Glu Leu	5202
tca ctg Ser Leu 1710	gga agt gct tat Gly Ser Ala Tyr 1715	cag gcc atg att ctg Gln Ala Met Ile Leu 1720	ggt gtc gac agc Gly Val Asp Ser	5247
aaa aac Lys Asn 1725	att ttc aac ttc Ile Phe Asn Phe 1730	aag gtc agt caa gaa Lys Val Ser Gln Glu 1735	gga ctt aag ctc Gly Leu Lys Leu	5292
tca aat	gac atg atg ggc tca	tat gct gaa atg aaa	ttt gac cac	5337

Ser	Asn	Asp	Met	Met	Gly	Ser	Tyr	Ala	Glu	Met	Lys	Phe	Asp	His	
1740						1745					1750				
aca	aac	agt	ctg	aac	att	gca	ggc	tta	tca	ctg	gac	ttc	tct	tca	5382
Thr	Asn	Ser	Leu	Asn	Ile	Ala	Gly	Leu	Ser	Leu	Asp	Phe	Ser	Ser	
1755						1760					1765				
aaa	ctt	gac	aac	att	tac	agc	tct	gac	aag	ttt	tat	aag	caa	act	5427
Lys	Leu	Asp	Asn	Ile	Tyr	Ser	Ser	Asp	Lys	Phe	Tyr	Lys	Gln	Thr	
1770						1775					1780				
gtt	aat	tta	cag	cta	cag	ccc	tat	tct	ctg	gta	act	act	tta	aac	5472
Val	Asn	Leu	Gln	Leu	Gln	Pro	Tyr	Ser	Leu	Val	Thr	Thr	Leu	Asn	
1785						1790					1795				
agt	gac	ctg	aaa	tac	aat	gct	ctg	gat	ctc	acc	aac	aat	ggg	aaa	5517
Ser	Asp	Leu	Lys	Tyr	Asn	Ala	Leu	Asp	Leu	Thr	Asn	Asn	Gly	Lys	
1800						1805					1810				
cta	cgg	cta	gaa	ccc	ctg	aag	ctg	cat	gtg	gct	ggg	aac	cta	aaa	5562
Leu	Arg	Leu	Glu	Pro	Leu	Lys	Leu	His	Val	Ala	Gly	Asn	Leu	Lys	
1815						1820					1825				
gga	gcc	tac	caa	aat	aat	gaa	ata	aaa	cac	atc	tat	gcc	atc	tct	5607
Gly	Ala	Tyr	Gln	Asn	Asn	Glu	Ile	Lys	His	Ile	Tyr	Ala	Ile	Ser	
1830						1835					1840				
tct	gct	gcc	tta	tca	gca	agc	tat	aaa	gca	gac	act	gtt	gct	aag	5652
Ser	Ala	Ala	Leu	Ser	Ala	Ser	Tyr	Lys	Ala	Asp	Thr	Val	Ala	Lys	
1845						1850					1855				
gtt	cag	ggg	gtg	gag	ttt	agc	cat	cgg	ctc	aac	aca	gac	atc	gct	5697
Val	Gln	Gly	Val	Glu	Phe	Ser	His	Arg	Leu	Asn	Thr	Asp	Ile	Ala	
1860						1865					1870				
ggg	ctg	gct	tca	gcc	att	gac	atg	agc	aca	aac	tat	aat	tca	gac	5742
Gly	Leu	Ala	Ser	Ala	Ile	Asp	Met	Ser	Thr	Asn	Tyr	Asn	Ser	Asp	
1875						1880					1885				
tca	ctg	cat	ttc	agc	aat	gtc	ttc	cgt	tct	gta	atg	gcc	cgg	ttt	5787
Ser	Leu	His	Phe	Ser	Asn	Val	Phe	Arg	Ser	Val	Met	Ala	Pro	Phe	
1890						1895					1900				
acc	atg	acc	atc	gat	gca	cat	aca	aat	ggc	aat	ggg	aaa	ctc	gct	5832
Thr	Met	Thr	Ile	Asp	Ala	His	Thr	Asn	Gly	Asn	Gly	Lys	Leu	Ala	
1905						1910					1915				
ctc	tgg	gga	gaa	cat	act	ggg	cag	ctg	tat	agc	aaa	ttc	ctg	ttg	5877
Leu	Trp	Gly	Glu	His	Thr	Gly	Gln	Leu	Tyr	Ser	Lys	Phe	Leu	Leu	
1920						1925					1930				
aaa	gca	gaa	cct	ctg	gca	ttt	act	ttc	tct	cat	gat	tac	aaa	ggc	5922
Lys	Ala	Glu	Pro	Leu	Ala	Phe	Thr	Phe	Ser	His	Asp	Tyr	Lys	Gly	
1935						1940					1945				
tcc	aca	agt	cat	cat	ctc	gtg	tct	agg	aaa	agc	atc	agt	gca	gct	5967
Ser	Thr	Ser	His	His	Leu	Val	Ser	Arg	Lys	Ser	Ile	Ser	Ala	Ala	
1950						1955					1960				
ctt	gaa	cac	aaa	gtc	agt	gcc	ctg	ctt	act	cca	gct	gag	cag	aca	6012

Leu	Glu	His	Lys	Val	Ser	Ala	Leu	Leu	Thr	Pro	Ala	Glu	Gln	Thr	
1965						1970					1975				
ggc	acc	tgg	aaa	ctc	aag	acc	caa	ttt	aac	aac	aat	gaa	tac	agc	6057
Gly	Thr	Trp	Lys	Leu	Lys	Thr	Gln	Phe	Asn	Asn	Asn	Glu	Tyr	Ser	
1980						1985					1990				
cag	gac	ttg	gat	gct	tac	aac	act	aaa	gat	aaa	att	ggc	gtg	gag	6102
Gln	Asp	Leu	Asp	Ala	Tyr	Asn	Thr	Lys	Asp	Lys	Ile	Gly	Val	Glu	
1995						2000					2005				
ctt	act	gga	cga	act	ctg	gct	gac	cta	act	cta	cta	gac	tcc	cca	6147
Leu	Thr	Gly	Arg	Thr	Leu	Ala	Asp	Leu	Thr	Leu	Leu	Asp	Ser	Pro	
2010						2015					2020				
att	aaa	gtg	cca	ctt	tta	ctc	agt	gag	ccc	atc	aat	atc	att	gat	6192
Ile	Lys	Val	Pro	Leu	Leu	Leu	Ser	Glu	Pro	Ile	Asn	Ile	Ile	Asp	
2025						2030					2035				
gct	tta	gag	atg	aga	gat	gcc	gtt	gag	aag	ccc	caa	gaa	ttt	aca	6237
Ala	Leu	Glu	Met	Arg	Asp	Ala	Val	Glu	Lys	Pro	Gln	Glu	Phe	Thr	
2040						2045					2050				
att	gtt	gct	ttt	gta	aag	tat	gat	aaa	aac	caa	gat	gtt	cac	tcc	6282
Ile	Val	Ala	Phe	Val	Lys	Tyr	Asp	Lys	Asn	Gln	Asp	Val	His	Ser	
2055						2060					2065				
att	aac	ctc	cca	ttt	ttt	gag	acc	ttg	caa	gaa	tat	ttt	gag	agg	6327
Ile	Asn	Leu	Pro	Phe	Phe	Glu	Thr	Leu	Gln	Glu	Tyr	Phe	Glu	Arg	
2070						2075					2080				
aat	cga	caa	acc	att	ata	gtt	gta	ctg	gaa	aac	gta	cag	aga	aac	6372
Asn	Arg	Gln	Thr	Ile	Ile	Val	Val	Leu	Glu	Asn	Val	Gln	Arg	Asn	
2085						2090					2095				
ctg	aag	cac	atc	aat	att	gat	caa	ttt	gta	aga	aaa	tac	aga	gca	6417
Leu	Lys	His	Ile	Asn	Ile	Asp	Gln	Phe	Val	Arg	Lys	Tyr	Arg	Ala	
2100						2105					2110				
gcc	ctg	gga	aaa	ctc	cca	cag	caa	gct	aat	gat	tat	ctg	aat	tca	6462
Ala	Leu	Gly	Lys	Leu	Pro	Gln	Gln	Ala	Asn	Asp	Tyr	Leu	Asn	Ser	
2115						2120					2125				
ttc	aat	tgg	gag	aga	caa	gtt	tca	cat	gcc	aag	gag	aaa	ctg	act	6507
Phe	Asn	Trp	Glu	Arg	Gln	Val	Ser	His	Ala	Lys	Glu	Lys	Leu	Thr	
2130						2135					2140				
gct	ctc	aca	aaa	aag	tat	aga	att	aca	gaa	aat	gat	ata	caa	att	6552
Ala	Leu	Thr	Lys	Lys	Tyr	Arg	Ile	Thr	Glu	Asn	Asp	Ile	Gln	Ile	
2145						2150					2155				
gca	tta	gat	gat	gcc	aaa	atc	aac	ttt	aat	gaa	aaa	cta	tct	caa	6597
Ala	Leu	Asp	Asp	Ala	Lys	Ile	Asn	Phe	Asn	Glu	Lys	Leu	Ser	Gln	
2160						2165					2170				
ctg	cag	aca	tat	atg	ata	caa	ttt	gat	cag	tat	att	aaa	gat	agt	6642
Leu	Gln	Thr	Tyr	Met	Ile	Gln	Phe	Asp	Gln	Tyr	Ile	Lys	Asp	Ser	
2175						2180					2185				
tat	gat	tta	cat	gat	ttg	aaa	ata	gct	att	gct	aat	att	att	gat	6687

Tyr Asp 2190	Leu His Asp Leu Lys 2195	Ile Ala Ile Ala Asn 2200	Ile Ile Asp	
gaa atc Glu Ile 2205	att gaa aaa tta aaa Ile Glu Lys Leu Lys 2210	agt ctt gat gag cac Ser Leu Asp Glu His 2215	tat cat atc Tyr His Ile	6732
cgt gta Arg Val 2220	aat tta gta aaa aca Asn Leu Val Lys Thr 2225	atc cat gat cta cat Ile His Asp Leu His 2230	ttg ttt att Leu Phe Ile	6777
gaa aat Glu Asn 2235	att gat ttt aac aaa Ile Asp Phe Asn Lys 2240	agt gga agt agt act Ser Gly Ser Ser Thr 2245	gca tcc tgg Ala Ser Trp	6822
att caa Ile Gln 2250	aat gtg gat act aag Asn Val Asp Thr Lys 2255	tac caa atc aga atc Tyr Gln Ile Arg Ile 2260	cag ata caa Gln Ile Gln	6867
gaa aaa Glu Lys 2265	ctg cag cag ctt aag Leu Gln Gln Leu Lys 2270	aga cac ata cag aat Arg His Ile Gln Asn 2275	ata gac atc Ile Asp Ile	6912
cag cac Gln His 2280	cta gct gga aag tta Leu Ala Gly Lys Leu 2285	aaa caa cac att gag Lys Gln His Ile Glu 2290	gct att gat Ala Ile Asp	6957
gtt aga Val Arg 2295	gtg ctt tta gat caa Val Leu Leu Asp Gln 2300	ttg gga act aca att Leu Gly Thr Thr Ile 2305	tca ttt gaa Ser Phe Glu	7002
aga ata Arg Ile 2310	aat gat gtt ctt gag Asn Asp Val Leu Glu 2315	cat gtc aaa cac ttt His Val Lys His Phe 2320	gtt ata aat Val Ile Asn	7047
ctt att Leu Ile 2325	ggg gat ttt gaa gta Gly Asp Phe Glu Val 2330	gct gag aaa atc aat Ala Glu Lys Ile Asn 2335	gcc ttc aga Ala Phe Arg	7092
gcc aaa Ala Lys 2340	gtc cat gag tta atc Val His Glu Leu Ile 2345	gag agg tat gaa gta Glu Arg Tyr Glu Val 2350	gac caa caa Asp Gln Gln	7137
atc cag Ile Gln 2355	gtt tta atg gat aaa Val Leu Met Asp Lys 2360	tta gta gag ttg gcc Leu Val Glu Leu Ala 2365	cac caa tac His Gln Tyr	7182
aag ttg Lys Leu 2370	aag gag act att cag Lys Glu Thr Ile Gln 2375	aag cta agc aat gtc Lys Leu Ser Asn Val 2380	cta caa caa Leu Gln Gln	7227
gtt aag Val Lys 2385	ata aaa gat tac ttt Ile Lys Asp Tyr Phe 2390	gag aaa ttg gtt gga Glu Lys Leu Val Gly 2395	ttt att gat Phe Ile Asp	7272
gat gct Asp Ala 2400	gtc aag aag ctt aat Val Lys Lys Leu Asn 2405	gaa tta tct ttt aaa Glu Leu Ser Phe Lys 2410	aca ttc att Thr Phe Ile	7317
gaa gat	gtt aac aaa ttc ctt	gac atg ttg ata aag	aaa tta aag	7362

Glu Asp Val Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys	
2415 2420 2425	
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Ser Phe Asp Tyr His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile	
2430 2435 2440	
cgt gag gtg act cag aga ctc aat ggt gaa att cag gct ctg gaa	7452
Arg Glu Val Thr Gln Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu	
2445 2450 2455	
cta cca caa aaa gct gaa gca tta aaa ctg ttt tta gag gaa acc	7497
Leu Pro Gln Lys Ala Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr	
2460 2465 2470	
aag gcc aca gtt gca gtg tat ctg gaa agc cta cag gac acc aaa	7542
Lys Ala Thr Val Ala Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys	
2475 2480 2485	
ata acc tta atc atc aat tgg tta cag gag gct tta agt tca gca	7587
Ile Thr Leu Ile Ile Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala	
2490 2495 2500	
tct ttg gct cac atg aag gcc aaa ttc cga gag act cta gaa gat	7632
Ser Leu Ala His Met Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp	
2505 2510 2515	
aca cga gac cga atg tat caa atg gac att cag cag gaa ctt caa	7677
Thr Arg Asp Arg Met Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln	
2520 2525 2530	
cga tac ctg tct ctg gta ggc cag gtt tat agc aca ctt gtc acc	7722
Arg Tyr Leu Ser Leu Val Gly Gln Val Tyr Ser Thr Leu Val Thr	
2535 2540 2545	
tac att tct gat tgg tgg act ctt gct gct aag aac ctt act gac	7767
Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp	
2550 2555 2560	
ttt gca gag caa tat tct atc caa gat tgg gct aaa cgt atg aaa	7812
Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala Lys Arg Met Lys	
2565 2570 2575	
gca ttg gta gag caa ggg ttc act gtt cct gaa atc aag acc atc	7857
Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile Lys Thr Ile	
2580 2585 2590	
ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct ctt cag	7902
Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala Leu Gln	
2595 2600 2605	
aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca gat	7947
Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr Asp	
2610 2615 2620	
ttg agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat	7992
Leu Arg Ile Pro Ser Val Gln Ile Asn Phe Lys Asp Leu Lys Asn	
2625 2630 2635	
ata aaa atc cca tcc agg ttt tcc aca cca gaa ttt acc atc ctt	8037

Ile Lys 2640	Ile Pro Ser Arg Phe 2645	Ser Thr Pro Glu Phe 2650	Thr Ile Leu	
aac acc Asn Thr 2655	ttc cac att cct tcc Phe His Ile Pro Ser 2660	ttt aca att gac ttt Phe Thr Ile Asp Phe 2665	gta gaa atg Val Glu Met	8082
aaa gta Lys Val 2670	aag atc atc aga acc Lys Ile Ile Arg Thr 2675	att gac cag atg ctg Ile Asp Gln Met Leu 2680	aac agt gag Asn Ser Glu	8127
ctg cag Leu Gln 2685	tgg ccc gtt cca gat Trp Pro Val Pro Asp 2690	ata tat ctc agg gat Ile Tyr Leu Arg Asp 2695	ctg aag gtg Leu Lys Val	8172
gag gac Glu Asp 2700	att cct cta gcg aga Ile Pro Leu Ala Arg 2705	atc acc ctg cca gac Ile Thr Leu Pro Asp 2710	ttc cgt tta Phe Arg Leu	8217
cca gaa Pro Glu 2715	atc gca att cca gaa Ile Ala Ile Pro Glu 2720	ttc ata atc cca act Phe Ile Ile Pro Thr 2725	ctc aac ctt Leu Asn Leu	8262
aat gat Asn Asp 2730	ttt caa gtt cct gac Phe Gln Val Pro Asp 2735	ctt cac ata cca gaa Leu His Ile Pro Glu 2740	ttc cag ctt Phe Gln Leu	8307
ccc cac Pro His 2745	atc tca cac aca att Ile Ser His Thr Ile 2750	gaa gta cct act ttt Glu Val Pro Thr Phe 2755	ggc aag cta Gly Lys Leu	8352
tac agt Tyr Ser 2760	att ctg aaa atc caa Ile Leu Lys Ile Gln 2765	tct cct ctt ttc aca Ser Pro Leu Phe Thr 2770	tta gat gca Leu Asp Ala	8397
aat gct Asn Ala 2775	gac ata ggg aat gga Asp Ile Gly Asn Gly 2780	acc acc tca gca aac Thr Thr Ser Ala Asn 2785	gaa gca ggt Glu Ala Gly	8442
atc gca Ile Ala 2790	gct tcc atc act gcc Ala Ser Ile Thr Ala 2795	aaa gga gag tcc aaa Lys Gly Glu Ser Lys 2800	tta gaa gtt Leu Glu Val	8487
ctc aat Leu Asn 2805	ttt gat ttt caa gca Phe Asp Phe Gln Ala 2810	aat gca caa ctc tca Asn Ala Gln Leu Ser 2815	aac cct aag Asn Pro Lys	8532
att aat Ile Asn 2820	cog ctg gct ctg aag Pro Leu Ala Leu Lys 2825	gag tca gtg aag ttc Glu Ser Val Lys Phe 2830	tcc agc aag Ser Ser Lys	8577
tac ctg Tyr Leu 2835	aga acg gag cat ggg Arg Thr Glu His Gly 2840	agt gaa atg ctg ttt Ser Glu Met Leu Phe 2845	ttt gga aat Phe Gly Asn	8622
gct att Ala Ile 2850	gag gga aaa tca aac Glu Gly Lys Ser Asn 2855	aca gtg gca agt tta Thr Val Ala Ser Leu 2860	cac aca gaa His Thr Glu	8667
aaa aat	aca ctg gag ctt agt	aat gga gtg att gtc	aag ata aac	8712

Lys	Asn	Thr	Leu	Glu	Leu	Ser	Asn	Gly	Val	Ile	Val	Lys	Ile	Asn	
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Asn	Gln	Leu	Thr	Leu	Asp	Ser	Asn	Thr	Lys	Tyr	Phe	His	Lys	Leu	
	2880					2885					2890				
aac	atc	ccc	aaa	ctg	gac	ttc	tct	agt	cag	gct	gac	ctg	cgc	aac	8802
Asn	Ile	Pro	Lys	Leu	Asp	Phe	Ser	Ser	Gln	Ala	Asp	Leu	Arg	Asn	
	2895					2900					2905				
gag	atc	aag	aca	ctg	ttg	aaa	gct	ggc	cac	ata	gca	tgg	act	tct	8847
Glu	Ile	Lys	Thr	Leu	Leu	Lys	Ala	Gly	His	Ile	Ala	Trp	Thr	Ser	
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Ser	Gly	Lys	Gly	Ser	Trp	Lys	Trp	Ala	Cys	Pro	Arg	Phe	Ser	Asp	
	2925					2930					2935				
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Glu	Gly	Thr	His	Glu	Ser	Gln	Ile	Ser	Phe	Thr	Ile	Glu	Gly	Pro	
	2940					2945					2950				
ctc	act	tcc	ttt	gga	ctg	tcc	aat	aag	atc	aat	agc	aaa	cac	cta	8982
Leu	Thr	Ser	Phe	Gly	Leu	Ser	Asn	Lys	Ile	Asn	Ser	Lys	His	Leu	
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Arg	Val	Asn	Gln	Asn	Leu	Val	Tyr	Glu	Ser	Gly	Ser	Leu	Asn	Phe	
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Ser	Lys	Leu	Glu	Ile	Gln	Ser	Gln	Val	Asp	Ser	Gln	His	Val	Gly	
	2985					2990					2995				
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His	Ser	Val	Leu	Thr	Ala	Lys	Gly	Met	Ala	Leu	Phe	Gly	Glu	Gly	
	3000					3005					3010				
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Lys	Ala	Glu	Phe	Thr	Gly	Arg	His	Asp	Ala	His	Leu	Asn	Gly	Lys	
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Val	Ile	Gly	Thr	Leu	Lys	Asn	Ser	Leu	Phe	Phe	Ser	Ala	Gln	Pro	
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Phe	Glu	Ile	Thr	Ala	Ser	Thr	Asn	Asn	Glu	Gly	Asn	Leu	Lys	Val	
	3045					3050					3055				
cgt	ttt	cca	tta	agg	tta	aca	ggg	aag	ata	gac	ttc	ctg	aat	aac	9297
Arg	Phe	Pro	Leu	Arg	Leu	Thr	Gly	Lys	Ile	Asp	Phe	Leu	Asn	Asn	
	3060					3065					3070				
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Tyr	Ala	Leu	Phe	Leu	Ser	Pro	Ser	Ala	Gln	Gln	Ala	Ser	Trp	Gln	
	3075					3080					3085				
gta	agt	gct	agg	ttc	aat	cag	tat	aag	tac	aac	caa	aat	ttc	tct	9387

Val	Ser	Ala	Arg	Phe	Asn	Gln	Tyr	Lys	Tyr	Asn	Gln	Asn	Phe	Ser	
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gct	gga	aac	aac	gag	aac	att	atg	gag	gcc	cat	gta	gga	ata	aat	9432
Ala	Gly	Asn	Asn	Glu	Asn	Ile	Met	Glu	Ala	His	Val	Gly	Ile	Asn	
	3105					3110					3115				
gga	gaa	gca	aat	ctg	gat	ttc	tta	aac	att	cct	tta	aca	att	cct	9477
Gly	Glu	Ala	Asn	Leu	Asp	Phe	Leu	Asn	Ile	Pro	Leu	Thr	Ile	Pro	
	3120					3125					3130				
gaa	atg	cgt	cta	cct	tac	aca	ata	atc	aca	act	cct	cca	ctg	aaa	9522
Glu	Met	Arg	Leu	Pro	Tyr	Thr	Ile	Ile	Thr	Thr	Pro	Pro	Leu	Lys	
	3135					3140					3145				
gat	ttc	tct	cta	tgg	gaa	aaa	aca	ggc	ttg	aag	gaa	ttc	ttg	aaa	9567
Asp	Phe	Ser	Leu	Trp	Glu	Lys	Thr	Gly	Leu	Lys	Glu	Phe	Leu	Lys	
	3150					3155					3160				
acg	aca	aag	caa	tca	ttt	gat	tta	agt	gta	aaa	gct	cag	tat	aag	9612
Thr	Thr	Lys	Gln	Ser	Phe	Asp	Leu	Ser	Val	Lys	Ala	Gln	Tyr	Lys	
	3165					3170					3175				
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Lys	Asn	Lys	His	Arg	His	Ser	Ile	Thr	Asn	Pro	Leu	Ala	Val	Leu	
	3180					3185					3190				
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Cys	Glu	Phe	Ile	Ser	Gln	Ser	Ile	Lys	Ser	Phe	Asp	Arg	His	Phe	
	3195					3200					3205				
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Glu	Lys	Asn	Arg	Asn	Asn	Ala	Leu	Asp	Phe	Val	Thr	Lys	Ser	Tyr	
	3210					3215					3220				
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Asn	Glu	Thr	Lys	Ile	Lys	Phe	Asp	Lys	Tyr	Lys	Ala	Glu	Lys	Ser	
	3225					3230					3235				
cac	gac	gag	ctc	ccc	agg	acc	ttt	caa	att	cct	gga	tac	act	gtt	9837
His	Asp	Glu	Leu	Pro	Arg	Thr	Phe	Gln	Ile	Pro	Gly	Tyr	Thr	Val	
	3240					3245					3250				
cca	gtt	gtc	aat	gtt	gaa	gtg	tct	cca	ttc	acc	ata	gag	atg	tcg	9882
Pro	Val	Val	Asn	Val	Glu	Val	Ser	Pro	Phe	Thr	Ile	Glu	Met	Ser	
	3255					3260					3265				
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Ala	Phe	Gly	Tyr	Val	Phe	Pro	Lys	Ala	Val	Ser	Met	Pro	Ser	Phe	
	3270					3275					3280				
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Ser	Ile	Leu	Gly	Ser	Asp	Val	Arg	Val	Pro	Ser	Tyr	Thr	Leu	Ile	
	3285					3290					3295				
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Leu	Pro	Ser	Leu	Glu	Leu	Pro	Val	Leu	His	Val	Pro	Arg	Asn	Leu	
	3300					3305					3310				
aag	ctt	tct	ctt	cca	gat	ttc	aag	gaa	ttg	tgt	acc	ata	agc	cat	10062

Lys	Leu	Ser	Leu	Pro	Asp	Phe	Lys	Glu	Leu	Cys	Thr	Ile	Ser	His	
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Ile	Phe	Ile	Pro	Ala	Met	Gly	Asn	Ile	Thr	Tyr	Asp	Phe	Ser	Phe	
3330						3335					3340				
aaa	tca	agt	gtc	atc	aca	ctg	aat	acc	aat	gct	gaa	ctt	ttt	aac	10152
Lys	Ser	Ser	Val	Ile	Thr	Leu	Asn	Thr	Asn	Ala	Glu	Leu	Phe	Asn	
3345						3350					3355				
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Gln	Ser	Asp	Ile	Val	Ala	His	Leu	Leu	Ser	Ser	Ser	Ser	Ser	Val	
3360						3365					3370				
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Ile	Asp	Ala	Leu	Gln	Tyr	Lys	Leu	Glu	Gly	Thr	Thr	Arg	Leu	Thr	
3375						3380					3385				
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Arg	Lys	Arg	Gly	Leu	Lys	Leu	Ala	Thr	Ala	Leu	Ser	Leu	Ser	Asn	
3390						3395					3400				
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Lys	Phe	Val	Glu	Gly	Ser	His	Asn	Ser	Thr	Val	Ser	Leu	Thr	Thr	
3405						3410					3415				
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Lys	Asn	Met	Glu	Val	Ser	Val	Ala	Thr	Thr	Thr	Lys	Ala	Gln	Ile	
3420						3425					3430				
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Pro	Ile	Leu	Arg	Met	Asn	Phe	Lys	Gln	Glu	Leu	Asn	Gly	Asn	Thr	
3435						3440					3445				
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Lys	Ser	Lys	Pro	Thr	Val	Ser	Ser	Ser	Met	Glu	Phe	Lys	Tyr	Asp	
3450						3455					3460				
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Phe	Asn	Ser	Ser	Met	Leu	Tyr	Ser	Thr	Ala	Lys	Gly	Ala	Val	Asp	
3465						3470					3475				
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His	Lys	Leu	Ser	Leu	Glu	Ser	Leu	Thr	Ser	Tyr	Phe	Ser	Ile	Glu	
3480						3485					3490				
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Ser	Ser	Thr	Lys	Gly	Asp	Val	Lys	Gly	Ser	Val	Leu	Ser	Arg	Glu	
3495						3500					3505				
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Tyr	Ser	Gly	Thr	Ile	Ala	Ser	Glu	Ala	Asn	Thr	Tyr	Leu	Asn	Ser	
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Ala	Thr	Leu	Gln	Arg	Ile	Tyr	Ser	Leu	Trp	Glu	His	Ser	Thr	Lys	
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Asn	His	Leu	Gln	Leu	Glu	Gly	Leu	Phe	Phe	Thr	Asn	Gly	Glu	His	
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Thr	Ser	Lys	Ala	Thr	Leu	Glu	Leu	Ser	Pro	Trp	Gln	Met	Ser	Ala	
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ctt	gtt	cag	gtc	cat	gca	agt	cag	ccc	agt	tcc	ttc	cat	gat	ttc	10917
Leu	Val	Gln	Val	His	Ala	Ser	Gln	Pro	Ser	Ser	Phe	His	Asp	Phe	
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cct	gac	ctt	ggc	cag	gaa	gtg	gcc	ctg	aat	gct	aac	act	aag	aac	10962
Pro	Asp	Leu	Gly	Gln	Glu	Val	Ala	Leu	Asn	Ala	Asn	Thr	Lys	Asn	
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Gln	Lys	Ile	Arg	Trp	Lys	Asn	Glu	Val	Arg	Ile	His	Ser	Gly	Ser	
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Phe	Gln	Ser	Gln	Val	Glu	Leu	Ser	Asn	Asp	Gln	Glu	Lys	Ala	His	
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Leu	Asp	Ile	Ala	Gly	Ser	Leu	Glu	Gly	His	Leu	Arg	Phe	Leu	Lys	
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Asn	Ile	Ile	Leu	Pro	Val	Tyr	Asp	Lys	Ser	Leu	Trp	Asp	Phe	Leu	
	3675					3680					3685				
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Lys	Leu	Asp	Val	Thr	Thr	Ser	Ile	Gly	Arg	Arg	Gln	His	Leu	Arg	
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Val	Ser	Thr	Ala	Phe	Val	Tyr	Thr	Lys	Asn	Pro	Asn	Gly	Tyr	Ser	
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Phe	Ser	Ile	Pro	Val	Lys	Val	Leu	Ala	Asp	Lys	Phe	Ile	Ile	Pro	
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Gly	Leu	Lys	Leu	Asn	Asp	Leu	Asn	Ser	Val	Leu	Val	Met	Pro	Thr	
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ttc	cat	gtc	cca	ttt	aca	gat	ctt	cag	gtt	cca	tcg	tgc	aaa	ctt	11367
Phe	His	Val	Pro	Phe	Thr	Asp	Leu	Gln	Val	Pro	Ser	Cys	Lys	Leu	
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gac	ttc	aga	gaa	ata	caa	atc	tat	aag	aag	ctg	aga	act	tca	tca	11412

Asp Phe	Arg Glu Ile Gln Ile	Tyr Lys Lys Leu Arg	Thr Ser Ser	
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Phe Ala	Leu Asn Leu Pro Thr	Leu Pro Glu Val Lys	Phe Pro Glu	
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gtt gat	gtg tta aca aaa tat	tct caa cca gaa gac	tcc ttg att	11502
Val Asp	Val Leu Thr Lys Tyr	Ser Gln Pro Glu Asp	Ser Leu Ile	
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ccc ttt	ttt gag ata acc gtg	cct gaa tct cag tta	act gtg tcc	11547
Pro Phe	Phe Glu Ile Thr Val	Pro Glu Ser Gln Leu	Thr Val Ser	
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Gln Phe	Thr Leu Pro Lys Ser	Val Ser Asp Gly Ile	Ala Ala Leu	
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gat cta	aat gca gta gcc aac	aag atc gca gac ttt	gag ttg ccc	11637
Asp Leu	Asn Ala Val Ala Asn	Lys Ile Ala Asp Phe	Glu Leu Pro	
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acc atc	atc gtg cct gag cag	acc att gag att ccc	tcc att aag	11682
Thr Ile	Ile Val Pro Glu Gln	Thr Ile Glu Ile Pro	Ser Ile Lys	
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Phe Ser	Val Pro Ala Gly Ile	Ala Ile Pro Ser Phe	Gln Ala Leu	
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Thr Ala	Arg Phe Glu Val Asp	Ser Pro Val Tyr Asn	Ala Thr Trp	
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Ser Ala	Ser Leu Lys Asn Lys	Ala Asp Tyr Val Glu	Thr Val Leu	
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Asp Ser	Thr Cys Ser Ser Thr	Val Gln Phe Leu Glu	Tyr Glu Leu	
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Asn Val	Leu Gly Thr His Lys	Ile Glu Asp Gly Thr	Leu Ala Ser	
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Lys Thr	Lys Gly Thr Phe Ala	His Arg Asp Phe Ser	Ala Glu Tyr	
3945		3950	3955	
gaa gaa	gat ggc aaa tat gaa	gga ctt cag gaa tgg	gaa gga aaa	11997
Glu Glu	Asp Gly Lys Tyr Glu	Gly Leu Gln Glu Trp	Glu Gly Lys	
3960		3965	3970	
gcg cac	ctc aat atc aaa agc	cca gcg ttc acc gat	ctc cat ctg	12042
Ala His	Leu Asn Ile Lys Ser	Pro Ala Phe Thr Asp	Leu His Leu	
3975		3980	3985	
cgc tac	cag aaa gac aag aaa	ggc atc tcc acc tca	gca gcc tcc	12087

Arg	Tyr	Gln	Lys	Asp	Lys	Lys	Gly	Ile	Ser	Thr	Ser	Ala	Ala	Ser	
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cca	gcc	gta	ggc	acc	gtg	ggc	atg	gat	atg	gat	gaa	gat	gac	gac	12132
Pro	Ala	Val	Gly	Thr	Val	Gly	Met	Asp	Met	Asp	Glu	Asp	Asp	Asp	
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Phe	Ser	Lys	Trp	Asn	Phe	Tyr	Tyr	Ser	Pro	Gln	Ser	Ser	Pro	Asp	
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Lys	Lys	Leu	Thr	Ile	Phe	Lys	Thr	Glu	Leu	Arg	Val	Arg	Glu	Ser	
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Asp	Glu	Glu	Thr	Gln	Ile	Lys	Val	Asn	Trp	Glu	Glu	Glu	Ala	Ala	
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Ser	Gly	Leu	Leu	Thr	Ser	Leu	Lys	Asp	Asn	Val	Pro	Lys	Ala	Thr	
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Asp	Asp	Ile	Asp	Glu	Arg	Phe	Gln	Lys	Gly	Ala	Ser	Gly	Thr	Thr	
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Gly	Thr	Tyr	Gln	Glu	Trp	Lys	Asp	Lys	Ala	Gln	Asn	Leu	Tyr	Gln	
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Glu	Leu	Leu	Thr	Gln	Glu	Gly	Gln	Ala	Ser	Phe	Gln	Gly	Leu	Lys	
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Asp	Asn	Val	Phe	Asp	Gly	Leu	Val	Arg	Val	Thr	Gln	Glu	Phe	His	
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Met	Lys	Val	Lys	His	Leu	Ile	Asp	Ser	Leu	Ile	Asp	Phe	Leu	Asn	
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Phe	Pro	Arg	Phe	Gln	Phe	Pro	Gly	Lys	Pro	Gly	Ile	Tyr	Thr	Arg	
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Glu Glu	Leu Cys Thr Met Phe	Ile Arg Glu Val Gly	Thr Val Leu	
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Ser Gln	Val Tyr Ser Lys Val	His Asn Gly Ser Glu	Ile Leu Phe	
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Ser Tyr	Phe Gln Asp Leu Val	Ile Thr Leu Pro Phe	Glu Leu Arg	
4245	4250	4255		
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Lys His	Lys Leu Ile Asp Val	Ile Ser Met Tyr Arg	Glu Leu Leu	
4260	4265	4270		
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Lys Asp	Leu Ser Lys Glu Ala	Gln Glu Val Phe Lys	Ala Ile Gln	
4275	4280	4285		
tct ctc	aag acc aca gag gtg	cta cgt aat ctt cag	gac ctt tta	12987
Ser Leu	Lys Thr Thr Glu Val	Leu Arg Asn Leu Gln	Asp Leu Leu	
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Gln Phe	Ile Phe Gln Leu Ile	Glu Asp Asn Ile Lys	Gln Leu Lys	
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Glu Met	Lys Phe Thr Tyr Leu	Ile Asn Tyr Ile Gln	Asp Glu Ile	
4320	4325	4330		
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Asn Thr	Ile Phe Asn Asp Tyr	Ile Pro Tyr Val Phe	Lys Leu Leu	
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Lys Glu	Asn Leu Cys Leu Asn	Leu His Lys Phe Asn	Glu Phe Ile	
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Gln Asn	Glu Leu Gln Glu Ala	Ser Gln Glu Leu Gln	Gln Ile His	
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Gln Tyr	Ile Met Ala Leu Arg	Glu Glu Tyr Phe Asp	Pro Ser Ile	
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Val Gly	Trp Thr Val Lys Tyr	Tyr Glu Leu Glu Glu	Lys Ile Val	
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Ser Leu	Ile Lys Asn Leu Leu	Val Ala Leu Lys Asp	Phe His Ser	
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Glu Tyr	Ile Val Ser Ala Ser	Asn Phe Thr Ser Gln	Leu Ser Ser	
4425	4430	4435		
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Gln Val Glu Gln Phe Leu His Arg Asn Ile Gln Glu Tyr Leu Ser
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 Ile Leu Thr Asp Pro Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu
 4455 4460 4465
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 Leu Ser Ala Thr Ala Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala
 4470 4475 4480
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 Thr Lys Lys Ile Ile Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys
 4485 4490 4495
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 Ile Ala Glu Ser Lys Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr
 4515 4520 4525
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 His Thr Phe Leu Ile Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln
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Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
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Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
 35 40 45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
 50 55 60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
 65 70 75 80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
 85 90 95

Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
 100 105 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
 115 120 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
 130 135 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
 145 150 155 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
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Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
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Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
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Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
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Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
 225 230 235 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
 245 250 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
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Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
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Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
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Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
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Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu Leu Lys Lys Leu Thr
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Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
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Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
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Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln
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Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg
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Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala
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Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met
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Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala
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Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu
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Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly
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Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly
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Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys
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Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile
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Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
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Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
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Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
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Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu Lys Glu Ser Gln Leu
 610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
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Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
 645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
 660 665 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
 675 680 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
 690 695 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
 705 710 715 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
 725 730 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
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Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
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Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
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Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
900 905 910

Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys Phe Ile Ile Pro Ser
915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
930 935 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
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Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
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Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr
995 1000 1005

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Arg	Glu	Asp	Arg	Ala	Leu	Val	Asp	Thr	Leu	Lys	Phe	Val	Thr	Gln
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Ala	Glu	Gly	Ala	Lys	Gln	Thr	Glu	Ala	Thr	Met	Thr	Phe	Lys	Tyr
1040						1045					1050			
Asn	Arg	Gln	Ser	Met	Thr	Leu	Ser	Ser	Glu	Val	Gln	Ile	Pro	Asp
1055						1060					1065			
Phe	Asp	Val	Asp	Leu	Gly	Thr	Ile	Leu	Arg	Val	Asn	Asp	Glu	Ser
1070						1075					1080			
Thr	Glu	Gly	Lys	Thr	Ser	Tyr	Arg	Leu	Thr	Leu	Asp	Ile	Gln	Asn
1085						1090					1095			
Lys	Lys	Ile	Thr	Glu	Val	Ala	Leu	Met	Gly	His	Leu	Ser	Cys	Asp
1100						1105					1110			
Thr	Lys	Glu	Glu	Arg	Lys	Ile	Lys	Gly	Val	Ile	Ser	Ile	Pro	Arg
1115						1120					1125			
Leu	Gln	Ala	Glu	Ala	Arg	Ser	Glu	Ile	Leu	Ala	His	Trp	Ser	Pro
1130						1135					1140			
Ala	Lys	Leu	Leu	Leu	Gln	Met	Asp	Ser	Ser	Ala	Thr	Ala	Tyr	Gly
1145						1150					1155			
Ser	Thr	Val	Ser	Lys	Arg	Val	Ala	Trp	His	Tyr	Asp	Glu	Glu	Lys
1160						1165					1170			
Ile	Glu	Phe	Glu	Trp	Asn	Thr	Gly	Thr	Asn	Val	Asp	Thr	Lys	Lys
1175						1180					1185			
Met	Thr	Ser	Asn	Phe	Pro	Val	Asp	Leu	Ser	Asp	Tyr	Pro	Lys	Ser
1190						1195					1200			
Leu	His	Met	Tyr	Ala	Asn	Arg	Leu	Leu	Asp	His	Arg	Val	Pro	Gln
1205						1210					1215			
Thr	Asp	Met	Thr	Phe	Arg	His	Val	Gly	Ser	Lys	Leu	Ile	Val	Ala
1220						1225					1230			

Met	Ser	Ser	Trp	Leu	Gln	Lys	Ala	Ser	Gly	Ser	Leu	Pro	Tyr	Thr
1235						1240					1245			
Gln	Thr	Leu	Gln	Asp	His	Leu	Asn	Ser	Leu	Lys	Glu	Phe	Asn	Leu
1250						1255					1260			
Gln	Asn	Met	Gly	Leu	Pro	Asp	Phe	His	Ile	Pro	Glu	Asn	Leu	Phe
1265						1270					1275			
Leu	Lys	Ser	Asp	Gly	Arg	Val	Lys	Tyr	Thr	Leu	Asn	Lys	Asn	Ser
1280						1285					1290			
Leu	Lys	Ile	Glu	Ile	Pro	Leu	Pro	Phe	Gly	Gly	Lys	Ser	Ser	Arg
1295						1300					1305			
Asp	Leu	Lys	Met	Leu	Glu	Thr	Val	Arg	Thr	Pro	Ala	Leu	His	Phe
1310						1315					1320			
Lys	Ser	Val	Gly	Phe	His	Leu	Pro	Ser	Arg	Glu	Phe	Gln	Val	Pro
1325						1330					1335			
Thr	Phe	Thr	Ile	Pro	Lys	Leu	Tyr	Gln	Leu	Gln	Val	Pro	Leu	Leu
1340						1345					1350			
Gly	Val	Leu	Asp	Leu	Ser	Thr	Asn	Val	Tyr	Ser	Asn	Leu	Tyr	Asn
1355						1360					1365			
Trp	Ser	Ala	Ser	Tyr	Ser	Gly	Gly	Asn	Thr	Ser	Thr	Asp	His	Phe
1370						1375					1380			
Ser	Leu	Arg	Ala	Arg	Tyr	His	Met	Lys	Ala	Asp	Ser	Val	Val	Asp
1385						1390					1395			
Leu	Leu	Ser	Tyr	Asn	Val	Gln	Gly	Ser	Gly	Glu	Thr	Thr	Tyr	Asp
1400						1405					1410			
His	Lys	Asn	Thr	Phe	Thr	Leu	Ser	Cys	Asp	Gly	Ser	Leu	Arg	His
1415						1420					1425			
Lys	Phe	Leu	Asp	Ser	Asn	Ile	Lys	Phe	Ser	His	Val	Glu	Lys	Leu
1430						1435					1440			
Gly	Asn	Asn	Pro	Val	Ser	Lys	Gly	Leu	Leu	Ile	Phe	Asp	Ala	Ser
1445						1450					1455			

Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser	Val	His	Leu	Asp	Ser
1460						1465					1470			
Lys	Lys	Lys	Gln	His	Leu	Phe	Val	Lys	Glu	Val	Lys	Ile	Asp	Gly
1475						1480					1485			
Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys	Gly	Thr	Tyr	Gly	Leu
1490						1495					1500			
Ser	Cys	Gln	Arg	Asp	Pro	Asn	Thr	Gly	Arg	Leu	Asn	Gly	Glu	Ser
1505						1510					1515			
Asn	Leu	Arg	Phe	Asn	Ser	Ser	Tyr	Leu	Gln	Gly	Thr	Asn	Gln	Ile
1520						1525					1530			
Thr	Gly	Arg	Tyr	Glu	Asp	Gly	Thr	Leu	Ser	Leu	Thr	Ser	Thr	Ser
1535						1540					1545			
Asp	Leu	Gln	Ser	Gly	Ile	Ile	Lys	Asn	Thr	Ala	Ser	Leu	Lys	Tyr
1550						1555					1560			
Glu	Asn	Tyr	Glu	Leu	Thr	Leu	Lys	Ser	Asp	Thr	Asn	Gly	Lys	Tyr
1565						1570					1575			
Lys	Asn	Phe	Ala	Thr	Ser	Asn	Lys	Met	Asp	Met	Thr	Phe	Ser	Lys
1580						1585					1590			
Gln	Asn	Ala	Leu	Leu	Arg	Ser	Glu	Tyr	Gln	Ala	Asp	Tyr	Glu	Ser
1595						1600					1605			
Leu	Arg	Phe	Phe	Ser	Leu	Leu	Ser	Gly	Ser	Leu	Asn	Ser	His	Gly
1610						1615					1620			
Leu	Glu	Leu	Asn	Ala	Asp	Ile	Leu	Gly	Thr	Asp	Lys	Ile	Asn	Ser
1625						1630					1635			
Gly	Ala	His	Lys	Ala	Thr	Leu	Arg	Ile	Gly	Gln	Asp	Gly	Ile	Ser
1640						1645					1650			
Thr	Ser	Ala	Thr	Thr	Asn	Leu	Lys	Cys	Ser	Leu	Leu	Val	Leu	Glu
1655						1660					1665			
Asn	Glu	Leu	Asn	Ala	Glu	Leu	Gly	Leu	Ser	Gly	Ala	Ser	Met	Lys
1670						1675					1680			

Leu Thr 1685	Thr Asn Gly Arg Phe 1690	Arg Glu His Asn Ala 1695	Lys Phe Ser
Leu Asp 1700	Gly Lys Ala Ala Leu 1705	Thr Glu Leu Ser Leu 1710	Gly Ser Ala
Tyr Gln 1715	Ala Met Ile Leu Gly 1720	Val Asp Ser Lys Asn 1725	Ile Phe Asn
Phe Lys 1730	Val Ser Gln Glu Gly 1735	Leu Lys Leu Ser Asn 1740	Asp Met Met
Gly Ser 1745	Tyr Ala Glu Met Lys 1750	Phe Asp His Thr Asn 1755	Ser Leu Asn
Ile Ala 1760	Gly Leu Ser Leu Asp 1765	Phe Ser Ser Lys Leu 1770	Asp Asn Ile
Tyr Ser 1775	Ser Asp Lys Phe Tyr 1780	Lys Gln Thr Val Asn 1785	Leu Gln Leu
Gln Pro 1790	Tyr Ser Leu Val Thr 1795	Thr Leu Asn Ser Asp 1800	Leu Lys Tyr
Asn Ala 1805	Leu Asp Leu Thr Asn 1810	Asn Gly Lys Leu Arg 1815	Leu Glu Pro
Leu Lys 1820	Leu His Val Ala Gly 1825	Asn Leu Lys Gly Ala 1830	Tyr Gln Asn
Asn Glu 1835	Ile Lys His Ile Tyr 1840	Ala Ile Ser Ser Ala 1845	Ala Leu Ser
Ala Ser 1850	Tyr Lys Ala Asp Thr 1855	Val Ala Lys Val Gln 1860	Gly Val Glu
Phe Ser 1865	His Arg Leu Asn Thr 1870	Asp Ile Ala Gly Leu 1875	Ala Ser Ala
Ile Asp 1880	Met Ser Thr Asn Tyr 1885	Asn Ser Asp Ser Leu 1890	His Phe Ser
Asn Val 1895	Phe Arg Ser Val Met 1900	Ala Pro Phe Thr Met 1905	Thr Ile Asp

Ala	His	Thr	Asn	Gly	Asn	Gly	Lys	Leu	Ala	Leu	Trp	Gly	Glu	His
1910						1915					1920			
Thr	Gly	Gln	Leu	Tyr	Ser	Lys	Phe	Leu	Leu	Lys	Ala	Glu	Pro	Leu
1925						1930					1935			
Ala	Phe	Thr	Phe	Ser	His	Asp	Tyr	Lys	Gly	Ser	Thr	Ser	His	His
1940						1945					1950			
Leu	Val	Ser	Arg	Lys	Ser	Ile	Ser	Ala	Ala	Leu	Glu	His	Lys	Val
1955						1960					1965			
Ser	Ala	Leu	Leu	Thr	Pro	Ala	Glu	Gln	Thr	Gly	Thr	Trp	Lys	Leu
1970						1975					1980			
Lys	Thr	Gln	Phe	Asn	Asn	Asn	Glu	Tyr	Ser	Gln	Asp	Leu	Asp	Ala
1985						1990					1995			
Tyr	Asn	Thr	Lys	Asp	Lys	Ile	Gly	Val	Glu	Leu	Thr	Gly	Arg	Thr
2000						2005					2010			
Leu	Ala	Asp	Leu	Thr	Leu	Leu	Asp	Ser	Pro	Ile	Lys	Val	Pro	Leu
2015						2020					2025			
Leu	Leu	Ser	Glu	Pro	Ile	Asn	Ile	Ile	Asp	Ala	Leu	Glu	Met	Arg
2030						2035					2040			
Asp	Ala	Val	Glu	Lys	Pro	Gln	Glu	Phe	Thr	Ile	Val	Ala	Phe	Val
2045						2050					2055			
Lys	Tyr	Asp	Lys	Asn	Gln	Asp	Val	His	Ser	Ile	Asn	Leu	Pro	Phe
2060						2065					2070			
Phe	Glu	Thr	Leu	Gln	Glu	Tyr	Phe	Glu	Arg	Asn	Arg	Gln	Thr	Ile
2075						2080					2085			
Ile	Val	Val	Leu	Glu	Asn	Val	Gln	Arg	Asn	Leu	Lys	His	Ile	Asn
2090						2095					2100			
Ile	Asp	Gln	Phe	Val	Arg	Lys	Tyr	Arg	Ala	Ala	Leu	Gly	Lys	Leu
2105						2110					2115			
Pro	Gln	Gln	Ala	Asn	Asp	Tyr	Leu	Asn	Ser	Phe	Asn	Trp	Glu	Arg
2120						2125					2130			

Gln Val 2135	Ser His Ala Lys	Glu 2140	Lys Leu Thr Ala Leu 2145	Thr Lys Lys
Tyr Arg 2150	Ile Thr Glu Asn Asp	2155	Ile Gln Ile Ala Leu 2160	Asp Asp Ala
Lys Ile 2165	Asn Phe Asn Glu Lys	2170	Leu Ser Gln Leu Gln 2175	Thr Tyr Met
Ile Gln 2180	Phe Asp Gln Tyr Ile	2185	Lys Asp Ser Tyr Asp 2190	Leu His Asp
Leu Lys 2195	Ile Ala Ile Ala Asn	2200	Ile Ile Asp Glu Ile 2205	Ile Glu Lys
Leu Lys 2210	Ser Leu Asp Glu His	2215	Tyr His Ile Arg Val 2220	Asn Leu Val
Lys Thr 2225	Ile His Asp Leu His	2230	Leu Phe Ile Glu Asn 2235	Ile Asp Phe
Asn Lys 2240	Ser Gly Ser Ser Thr	2245	Ala Ser Trp Ile Gln 2250	Asn Val Asp
Thr Lys 2255	Tyr Gln Ile Arg Ile	2260	Gln Ile Gln Glu Lys 2265	Leu Gln Gln
Leu Lys 2270	Arg His Ile Gln Asn	2275	Ile Asp Ile Gln His 2280	Leu Ala Gly
Lys Leu 2285	Lys Gln His Ile Glu	2290	Ala Ile Asp Val Arg 2295	Val Leu Leu
Asp Gln 2300	Leu Gly Thr Thr Ile	2305	Ser Phe Glu Arg Ile 2310	Asn Asp Val
Leu Glu 2315	His Val Lys His Phe	2320	Val Ile Asn Leu Ile 2325	Gly Asp Phe
Glu Val 2330	Ala Glu Lys Ile Asn	2335	Ala Phe Arg Ala Lys 2340	Val His Glu
Leu Ile 2345	Glu Arg Tyr Glu Val	2350	Asp Gln Gln Ile Gln 2355	Val Leu Met

Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	Lys	Leu	Lys	Glu	Thr
2360						2365					2370			
Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	Val	Lys	Ile	Lys	Asp
2375						2380					2385			
Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	Asp	Ala	Val	Lys	Lys
2390						2395					2400			
Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	Glu	Asp	Val	Asn	Lys
2405						2410					2415			
Phe	Leu	Asp	Met	Leu	Ile	Lys	Lys	Leu	Lys	Ser	Phe	Asp	Tyr	His
2420						2425					2430			
Gln	Phe	Val	Asp	Glu	Thr	Asn	Asp	Lys	Ile	Arg	Glu	Val	Thr	Gln
2435						2440					2445			
Arg	Leu	Asn	Gly	Glu	Ile	Gln	Ala	Leu	Glu	Leu	Pro	Gln	Lys	Ala
2450						2455					2460			
Glu	Ala	Leu	Lys	Leu	Phe	Leu	Glu	Glu	Thr	Lys	Ala	Thr	Val	Ala
2465						2470					2475			
Val	Tyr	Leu	Glu	Ser	Leu	Gln	Asp	Thr	Lys	Ile	Thr	Leu	Ile	Ile
2480						2485					2490			
Asn	Trp	Leu	Gln	Glu	Ala	Leu	Ser	Ser	Ala	Ser	Leu	Ala	His	Met
2495						2500					2505			
Lys	Ala	Lys	Phe	Arg	Glu	Thr	Leu	Glu	Asp	Thr	Arg	Asp	Arg	Met
2510						2515					2520			
Tyr	Gln	Met	Asp	Ile	Gln	Gln	Glu	Leu	Gln	Arg	Tyr	Leu	Ser	Leu
2525						2530					2535			
Val	Gly	Gln	Val	Tyr	Ser	Thr	Leu	Val	Thr	Tyr	Ile	Ser	Asp	Trp
2540						2545					2550			
Trp	Thr	Leu	Ala	Ala	Lys	Asn	Leu	Thr	Asp	Phe	Ala	Glu	Gln	Tyr
2555						2560					2565			
Ser	Ile	Gln	Asp	Trp	Ala	Lys	Arg	Met	Lys	Ala	Leu	Val	Glu	Gln
2570						2575					2580			

Gly	Phe	Thr	Val	Pro	Glu	Ile	Lys	Thr	Ile	Leu	Gly	Thr	Met	Pro
2585						2590					2595			
Ala	Phe	Glu	Val	Ser	Leu	Gln	Ala	Leu	Gln	Lys	Ala	Thr	Phe	Gln
2600						2605					2610			
Thr	Pro	Asp	Phe	Ile	Val	Pro	Leu	Thr	Asp	Leu	Arg	Ile	Pro	Ser
2615						2620					2625			
Val	Gln	Ile	Asn	Phe	Lys	Asp	Leu	Lys	Asn	Ile	Lys	Ile	Pro	Ser
2630						2635					2640			
Arg	Phe	Ser	Thr	Pro	Glu	Phe	Thr	Ile	Leu	Asn	Thr	Phe	His	Ile
2645						2650					2655			
Pro	Ser	Phe	Thr	Ile	Asp	Phe	Val	Glu	Met	Lys	Val	Lys	Ile	Ile
2660						2665					2670			
Arg	Thr	Ile	Asp	Gln	Met	Leu	Asn	Ser	Glu	Leu	Gln	Trp	Pro	Val
2675						2680					2685			
Pro	Asp	Ile	Tyr	Leu	Arg	Asp	Leu	Lys	Val	Glu	Asp	Ile	Pro	Leu
2690						2695					2700			
Ala	Arg	Ile	Thr	Leu	Pro	Asp	Phe	Arg	Leu	Pro	Glu	Ile	Ala	Ile
2705						2710					2715			
Pro	Glu	Phe	Ile	Ile	Pro	Thr	Leu	Asn	Leu	Asn	Asp	Phe	Gln	Val
2720						2725					2730			
Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	Pro	His	Ile	Ser	His
2735						2740					2745			
Thr	Ile	Glu	Val	Pro	Thr	Phe	Gly	Lys	Leu	Tyr	Ser	Ile	Leu	Lys
2750						2755					2760			
Ile	Gln	Ser	Pro	Leu	Phe	Thr	Leu	Asp	Ala	Asn	Ala	Asp	Ile	Gly
2765						2770					2775			
Asn	Gly	Thr	Thr	Ser	Ala	Asn	Glu	Ala	Gly	Ile	Ala	Ala	Ser	Ile
2780						2785					2790			
Thr	Ala	Lys	Gly	Glu	Ser	Lys	Leu	Glu	Val	Leu	Asn	Phe	Asp	Phe
2795						2800					2805			

Gln Ala	Asn Ala	Gln Leu	Ser	Asn Pro	Lys Ile	Asn	Pro Leu	Ala	
2810			2815			2820			
Leu Lys	Glu Ser	Val Lys	Phe	Ser Ser	Lys Tyr	Leu	Arg Thr	Glu	
2825			2830			2835			
His Gly	Ser Glu	Met Leu	Phe	Phe Gly	Asn Ala	Ile	Glu Gly	Lys	
2840			2845			2850			
Ser Asn	Thr Val	Ala Ser	Leu	His Thr	Glu Lys	Asn	Thr Leu	Glu	
2855			2860			2865			
Leu Ser	Asn Gly	Val Ile	Val	Lys Ile	Asn Asn	Gln	Leu Thr	Leu	
2870			2875			2880			
Asp Ser	Asn Thr	Lys Tyr	Phe	His Lys	Leu Asn	Ile	Pro Lys	Leu	
2885			2890			2895			
Asp Phe	Ser Ser	Gln Ala	Asp	Leu Arg	Asn Glu	Ile	Lys Thr	Leu	
2900			2905			2910			
Leu Lys	Ala Gly	His Ile	Ala	Trp Thr	Ser Ser	Gly	Lys Gly	Ser	
2915			2920			2925			
Trp Lys	Trp Ala	Cys Pro	Arg	Phe Ser	Asp Glu	Gly	Thr His	Glu	
2930			2935			2940			
Ser Gln	Ile Ser	Phe Thr	Ile	Glu Gly	Pro Leu	Thr	Ser Phe	Gly	
2945			2950			2955			
Leu Ser	Asn Lys	Ile Asn	Ser	Lys His	Leu Arg	Val	Asn Gln	Asn	
2960			2965			2970			
Leu Val	Tyr Glu	Ser Gly	Ser	Leu Asn	Phe Ser	Lys	Leu Glu	Ile	
2975			2980			2985			
Gln Ser	Gln Val	Asp Ser	Gln	His Val	Gly His	Ser	Val Leu	Thr	
2990			2995			3000			
Ala Lys	Gly Met	Ala Leu	Phe	Gly Glu	Gly Lys	Ala	Glu Phe	Thr	
3005			3010			3015			
Gly Arg	His Asp	Ala His	Leu	Asn Gly	Lys Val	Ile	Gly Thr	Leu	
3020			3025			3030			

Lys Asn	Ser Leu Phe Phe Ser	Ala Gln Pro Phe Glu	Ile Thr Ala
3035	3040	3045	
Ser Thr	Asn Asn Glu Gly Asn	Leu Lys Val Arg Phe	Pro Leu Arg
3050	3055	3060	
Leu Thr	Gly Lys Ile Asp Phe	Leu Asn Asn Tyr Ala	Leu Phe Leu
3065	3070	3075	
Ser Pro	Ser Ala Gln Gln Ala	Ser Trp Gln Val Ser	Ala Arg Phe
3080	3085	3090	
Asn Gln	Tyr Lys Tyr Asn Gln	Asn Phe Ser Ala Gly	Asn Asn Glu
3095	3100	3105	
Asn Ile	Met Glu Ala His Val	Gly Ile Asn Gly Glu	Ala Asn Leu
3110	3115	3120	
Asp Phe	Leu Asn Ile Pro Leu	Thr Ile Pro Glu Met	Arg Leu Pro
3125	3130	3135	
Tyr Thr	Ile Ile Thr Thr Pro	Pro Leu Lys Asp Phe	Ser Leu Trp
3140	3145	3150	
Glu Lys	Thr Gly Leu Lys Glu	Phe Leu Lys Thr Thr	Lys Gln Ser
3155	3160	3165	
Phe Asp	Leu Ser Val Lys Ala	Gln Tyr Lys Lys Asn	Lys His Arg
3170	3175	3180	
His Ser	Ile Thr Asn Pro Leu	Ala Val Leu Cys Glu	Phe Ile Ser
3185	3190	3195	
Gln Ser	Ile Lys Ser Phe Asp	Arg His Phe Glu Lys	Asn Arg Asn
3200	3205	3210	
Asn Ala	Leu Asp Phe Val Thr	Lys Ser Tyr Asn Glu	Thr Lys Ile
3215	3220	3225	
Lys Phe	Asp Lys Tyr Lys Ala	Glu Lys Ser His Asp	Glu Leu Pro
3230	3235	3240	
Arg Thr	Phe Gln Ile Pro Gly	Tyr Thr Val Pro Val	Val Asn Val
3245	3250	3255	

Glu Val 3260	Ser Pro Phe Thr Ile 3265	Glu Met Ser Ala Phe 3270	Gly Tyr Val
Phe Pro 3275	Lys Ala Val Ser Met 3280	Pro Ser Phe Ser Ile 3285	Leu Gly Ser
Asp Val 3290	Arg Val Pro Ser Tyr 3295	Thr Leu Ile Leu Pro 3300	Ser Leu Glu
Leu Pro 3305	Val Leu His Val Pro 3310	Arg Asn Leu Lys Leu 3315	Ser Leu Pro
Asp Phe 3320	Lys Glu Leu Cys Thr 3325	Ile Ser His Ile Phe 3330	Ile Pro Ala
Met Gly 3335	Asn Ile Thr Tyr Asp 3340	Phe Ser Phe Lys Ser 3345	Ser Val Ile
Thr Leu 3350	Asn Thr Asn Ala Glu 3355	Leu Phe Asn Gln Ser 3360	Asp Ile Val
Ala His 3365	Leu Leu Ser Ser Ser 3370	Ser Ser Val Ile Asp 3375	Ala Leu Gln
Tyr Lys 3380	Leu Glu Gly Thr Thr 3385	Arg Leu Thr Arg Lys 3390	Arg Gly Leu
Lys Leu 3395	Ala Thr Ala Leu Ser 3400	Leu Ser Asn Lys Phe 3405	Val Glu Gly
Ser His 3410	Asn Ser Thr Val Ser 3415	Leu Thr Thr Lys Asn 3420	Met Glu Val
Ser Val 3425	Ala Thr Thr Thr Lys 3430	Ala Gln Ile Pro Ile 3435	Leu Arg Met
Asn Phe 3440	Lys Gln Glu Leu Asn 3445	Gly Asn Thr Lys Ser 3450	Lys Pro Thr
Val Ser 3455	Ser Ser Met Glu Phe 3460	Lys Tyr Asp Phe Asn 3465	Ser Ser Met
Leu Tyr 3470	Ser Thr Ala Lys Gly 3475	Ala Val Asp His Lys 3480	Leu Ser Leu

Glu Ser	Leu Thr Ser Tyr Phe	Ser Ile Glu Ser Ser	Thr Lys Gly
3485	3490	3495	
Asp Val	Lys Gly Ser Val Leu	Ser Arg Glu Tyr Ser	Gly Thr Ile
3500	3505	3510	
Ala Ser	Glu Ala Asn Thr Tyr	Leu Asn Ser Lys Ser	Thr Arg Ser
3515	3520	3525	
Ser Val	Lys Leu Gln Gly Thr	Ser Lys Ile Asp Asp	Ile Trp Asn
3530	3535	3540	
Leu Glu	Val Lys Glu Asn Phe	Ala Gly Glu Ala Thr	Leu Gln Arg
3545	3550	3555	
Ile Tyr	Ser Leu Trp Glu His	Ser Thr Lys Asn His	Leu Gln Leu
3560	3565	3570	
Glu Gly	Leu Phe Phe Thr Asn	Gly Glu His Thr Ser	Lys Ala Thr
3575	3580	3585	
Leu Glu	Leu Ser Pro Trp Gln	Met Ser Ala Leu Val	Gln Val His
3590	3595	3600	
Ala Ser	Gln Pro Ser Ser Phe	His Asp Phe Pro Asp	Leu Gly Gln
3605	3610	3615	
Glu Val	Ala Leu Asn Ala Asn	Thr Lys Asn Gln Lys	Ile Arg Trp
3620	3625	3630	
Lys Asn	Glu Val Arg Ile His	Ser Gly Ser Phe Gln	Ser Gln Val
3635	3640	3645	
Glu Leu	Ser Asn Asp Gln Glu	Lys Ala His Leu Asp	Ile Ala Gly
3650	3655	3660	
Ser Leu	Glu Gly His Leu Arg	Phe Leu Lys Asn Ile	Ile Leu Pro
3665	3670	3675	
Val Tyr	Asp Lys Ser Leu Trp	Asp Phe Leu Lys Leu	Asp Val Thr
3680	3685	3690	
Thr Ser	Ile Gly Arg Arg Gln	His Leu Arg Val Ser	Thr Ala Phe
3695	3700	3705	

Val Tyr	Thr Lys Asn Pro Asn	Gly Tyr Ser Phe Ser	Ile Pro Val
3710	3715	3720	
Lys Val	Leu Ala Asp Lys Phe	Ile Ile Pro Gly Leu	Lys Leu Asn
3725	3730	3735	
Asp Leu	Asn Ser Val Leu Val	Met Pro Thr Phe His	Val Pro Phe
3740	3745	3750	
Thr Asp	Leu Gln Val Pro Ser	Cys Lys Leu Asp Phe	Arg Glu Ile
3755	3760	3765	
Gln Ile	Tyr Lys Lys Leu Arg	Thr Ser Ser Phe Ala	Leu Asn Leu
3770	3775	3780	
Pro Thr	Leu Pro Glu Val Lys	Phe Pro Glu Val Asp	Val Leu Thr
3785	3790	3795	
Lys Tyr	Ser Gln Pro Glu Asp	Ser Leu Ile Pro Phe	Phe Glu Ile
3800	3805	3810	
Thr Val	Pro Glu Ser Gln Leu	Thr Val Ser Gln Phe	Thr Leu Pro
3815	3820	3825	
Lys Ser	Val Ser Asp Gly Ile	Ala Ala Leu Asp Leu	Asn Ala Val
3830	3835	3840	
Ala Asn	Lys Ile Ala Asp Phe	Glu Leu Pro Thr Ile	Ile Val Pro
3845	3850	3855	
Glu Gln	Thr Ile Glu Ile Pro	Ser Ile Lys Phe Ser	Val Pro Ala
3860	3865	3870	
Gly Ile	Ala Ile Pro Ser Phe	Gln Ala Leu Thr Ala	Arg Phe Glu
3875	3880	3885	
Val Asp	Ser Pro Val Tyr Asn	Ala Thr Trp Ser Ala	Ser Leu Lys
3890	3895	3900	
Asn Lys	Ala Asp Tyr Val Glu	Thr Val Leu Asp Ser	Thr Cys Ser
3905	3910	3915	
Ser Thr	Val Gln Phe Leu Glu	Tyr Glu Leu Asn Val	Leu Gly Thr
3920	3925	3930	

His Lys	Ile Glu Asp Gly Thr	Leu Ala Ser Lys Thr	Lys Gly Thr
3935	3940	3945	
Phe Ala	His Arg Asp Phe Ser	Ala Glu Tyr Glu Glu	Asp Gly Lys
3950	3955	3960	
Tyr Glu	Gly Leu Gln Glu Trp	Glu Gly Lys Ala His	Leu Asn Ile
3965	3970	3975	
Lys Ser	Pro Ala Phe Thr Asp	Leu His Leu Arg Tyr	Gln Lys Asp
3980	3985	3990	
Lys Lys	Gly Ile Ser Thr Ser	Ala Ala Ser Pro Ala	Val Gly Thr
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Val Gly	Met Asp Met Asp Glu	Asp Asp Asp Phe Ser	Lys Trp Asn
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Phe Tyr	Tyr Ser Pro Gln Ser	Ser Pro Asp Lys Lys	Leu Thr Ile
4025	4030	4035	
Phe Lys	Thr Glu Leu Arg Val	Arg Glu Ser Asp Glu	Glu Thr Gln
4040	4045	4050	
Ile Lys	Val Asn Trp Glu Glu	Glu Ala Ala Ser Gly	Leu Leu Thr
4055	4060	4065	
Ser Leu	Lys Asp Asn Val Pro	Lys Ala Thr Gly Val	Leu Tyr Asp
4070	4075	4080	
Tyr Val	Asn Lys Tyr His Trp	Glu His Thr Gly Leu	Thr Leu Arg
4085	4090	4095	
Glu Val	Ser Ser Lys Leu Arg	Arg Asn Leu Gln Asp	His Ala Glu
4100	4105	4110	
Trp Val	Tyr Gln Gly Ala Ile	Arg Glu Ile Asp Asp	Ile Asp Glu
4115	4120	4125	
Arg Phe	Gln Lys Gly Ala Ser	Gly Thr Thr Gly Thr	Tyr Gln Glu
4130	4135	4140	
Trp Lys	Asp Lys Ala Gln Asn	Leu Tyr Gln Glu Leu	Leu Thr Gln
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Glu Gly	Gln Ala Ser Phe Gln	Gly Leu Lys Asp Asn	Val Phe Asp
4160	4165	4170	
Gly Leu	Val Arg Val Thr Gln	Glu Phe His Met Lys	Val Lys His
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Leu Ile	Asp Ser Leu Ile Asp	Phe Leu Asn Phe Pro	Arg Phe Gln
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Phe Pro	Gly Lys Pro Gly Ile	Tyr Thr Arg Glu Glu	Leu Cys Thr
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Met Phe	Ile Arg Glu Val Gly	Thr Val Leu Ser Gln	Val Tyr Ser
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Lys Val	His Asn Gly Ser Glu	Ile Leu Phe Ser Tyr	Phe Gln Asp
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Leu Val	Ile Thr Leu Pro Phe	Glu Leu Arg Lys His	Lys Leu Ile
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Asp Val	Ile Ser Met Tyr Arg	Glu Leu Leu Lys Asp	Leu Ser Lys
4265	4270	4275	
Glu Ala	Gln Glu Val Phe Lys	Ala Ile Gln Ser Leu	Lys Thr Thr
4280	4285	4290	
Glu Val	Leu Arg Asn Leu Gln	Asp Leu Leu Gln Phe	Ile Phe Gln
4295	4300	4305	
Leu Ile	Glu Asp Asn Ile Lys	Gln Leu Lys Glu Met	Lys Phe Thr
4310	4315	4320	
Tyr Leu	Ile Asn Tyr Ile Gln	Asp Glu Ile Asn Thr	Ile Phe Asn
4325	4330	4335	
Asp Tyr	Ile Pro Tyr Val Phe	Lys Leu Leu Lys Glu	Asn Leu Cys
4340	4345	4350	
Leu Asn	Leu His Lys Phe Asn	Glu Phe Ile Gln Asn	Glu Leu Gln
4355	4360	4365	
Glu Ala	Ser Gln Glu Leu Gln	Gln Ile His Gln Tyr	Ile Met Ala
4370	4375	4380	

Leu Arg Glu Glu Tyr Phe Asp Pro Ser Ile Val Gly Trp Thr Val
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Lys Tyr Tyr Glu Leu Glu Glu Lys Ile Val Ser Leu Ile Lys Asn
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Leu Leu Val Ala Leu Lys Asp Phe His Ser Glu Tyr Ile Val Ser
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Ala Ser Asn Phe Thr Ser Gln Leu Ser Ser Gln Val Glu Gln Phe
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Leu His Arg Asn Ile Gln Glu Tyr Leu Ser Ile Leu Thr Asp Pro
4445 4450 4455

Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu Leu Ser Ala Thr Ala
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Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala Thr Lys Lys Ile Ile
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Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys Leu Gln Asp Phe Ser
4490 4495 4500

Asp Gln Leu Ser Asp Tyr Tyr Glu Lys Phe Ile Ala Glu Ser Lys
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Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr His Thr Phe Leu Ile
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Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln Ser Thr Thr Val Met
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Asn Pro Tyr Met Lys Leu Ala Pro Gly Glu Leu Thr Ile Ile Leu
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Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
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cag gcc aag gtg gag caa gcg gtg gag aca gag ccg gag ccc gag ctg 156
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu

09751708 1030102

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ggt Gly	cgc Arg 50	ttt Phe	tgg Trp	gat Asp	tac Tyr	ctg Leu 55	cgc Arg	tgg Trp	gtg Val	cag Gln	aca Thr 60	ctg Leu	tct Ser	gag Glu	cag Gln	252
gtg Val 65	cag Gln	gag Glu	gag Glu	ctg Leu	ctc Leu 70	agc Ser	tcc Ser	cag Gln	gtc Val	acc Thr 75	cag Gln	gaa Glu	ctg Leu	agg Arg	gcg Ala 80	300
ctg Leu	atg Met	gac Asp	gag Glu	acc Thr 85	atg Met	aag Lys	gag Glu	ttg Leu	aag Lys 90	gcc Ala	tac Tyr	aaa Lys	tcg Ser	gaa Glu 95	ctg Leu	348
gag Glu	gaa Glu	caa Gln	ctg Leu 100	acc Thr	ccg Pro	gtg Val	gcg Ala	gag Glu 105	gag Glu	acg Thr	cgg Arg	gca Ala	cgg Arg 110	ctg Leu	tcc Ser	396
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gtg Val	tgc Cys 130	ggc Gly	cgc Arg	ctg Leu	gtg Val	cag Gln 135	tac Tyr	cgc Arg	ggc Gly	gag Glu	gtg Val 140	cag Gln	gcc Ala	atg Met	ctc Leu	492
ggc Gly 145	cag Gln	agc Ser	acc Thr	gag Glu	gag Glu 150	ctg Leu	cgg Arg	gtg Val	cgc Arg	ctc Leu 155	gcc Ala	tcc Ser	cac His	ctg Leu	cgc Arg 160	540
aag Lys	ctg Leu	cgt Arg	aag Lys	cgg Arg 165	ctc Leu	ctc Leu	cgc Arg	gat Asp	gcc Ala 170	gat Asp	gac Asp	ctg Leu	cag Gln	aag Lys 175	cgc Arg	588
ctg Leu	gca Ala	gtg Val	tac Tyr 180	cag Gln	gcc Ala	ggg Gly	gcc Ala	cgc Arg 185	gag Glu	ggc Gly	gcc Ala	gag Glu	cgc Arg 190	ggc Gly	ctc Leu	636
agc Ser	gcc Ala	atc Ile 195	cgc Arg	gag Glu	cgc Arg	ctg Leu	ggg Gly 200	ccc Pro	ctg Leu	gtg Val	gaa Glu 205	cag Gln	ggc Gly	cgc Arg	gtg Val	684
cgg Arg	gcc Ala 210	gcc Ala	act Thr	gtg Val	ggc Gly	tcc Ser 215	ctg Leu	gcc Ala	ggc Gly	cag Gln	ccg Pro 220	cta Leu	cag Gln	gag Glu	cgg Arg	732
gcc Ala 225	cag Gln	gcc Ala	tgg Trp	ggc Gly	gag Glu 230	cgg Arg	ctg Leu	cgc Arg	gcg Ala	cgg Arg 235	atg Met	gag Glu	gag Glu	atg Met	ggc Gly 240	780
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	260							265				270					
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Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu																	
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gac atg cag cgc cag tgg gcc ggg ctg gtg gag aag gtg cag gct gcc																	972
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala																	
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Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His																	
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Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
50 55 60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
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Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
85 90 95

Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
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Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
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Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
130 135 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg

145 150 155 160
 Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
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 Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
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 Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
 195 200 205
 Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
 210 215 220
 Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
 225 230 235 240
 Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
 245 250 255
 Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
 260 265 270
 Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
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 Val Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu
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 Trp Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys
 35 40 45
 tcc tcg tct tcc ttt gcc tgg ggg tct tcc ttc tat gga aga act ggc 191

Ser Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly
 50 55 60
 ggc tta aga aca tca aca gca tca act ttg aca acc ccg tct atc aga 239
 Gly Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg
 65 70 75
 aga cca cag agg atg agg tcc aca ttt gcc aca acc agg acg gct aca 287
 Arg Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr
 80 85 90 95
 gct acc cct cga gac aga tgg tca gtc tgg agg atg acg tgg cgt gaa 335
 Ala Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu
 100 105 110
 cat ctg cct gga gtc ccg ccc ctg ccc aga acc ctt cct gag acc tcg 383
 His Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser
 115 120 125
 ccg gcc ttg ttt tat tca aag aca gag aag acc aaa gca ttg cct gcc 431
 Pro Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala
 130 135 140
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 Arg Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe
 145 150 155
 gga cag tgc cca tgc aat ggc ttg ggt tgg gat ttt ggt ttc ttc ctt 527
 Gly Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu
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 Ser Cys Glu Gly

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Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys Ser
 35 40 45

Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly Gly
 50 55 60

Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg Arg
 65 70 75 80

Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr Ala
 85 90 95

Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu His
100 105 110

Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser Pro
115 120 125

Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala Arg
130 135 140

Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe Gly
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Cys Glu Gly

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Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys
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Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys
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Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys
45 50 55

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Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly
60 65 70

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Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg
75 80 85

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Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys
90 95 100 105

cac ccg cac ggc cag tgc gag cca gcc acg ggc gcg tgc cag tgc cag 389
His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln

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Trp	Trp	Ser	Ser	Thr	Cys	Arg	Arg	Pro	Cys	Gln	Cys	Asn	Thr	Ala	Ala					
	155					160					165									
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Lys	Leu	Pro	Trp	Val	Thr	Val	Ser	His	His	Asp	Pro	Glu	Val	Pro	Phe						
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Asn	His	Ser	Phe	Ile	Glu	Pro	Pro	Ser	Ala	Gly	Trp	Ala	Thr	Asp	Asp						
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Tyr	Cys	Val	Pro	Pro	Gln	Glu	Gly	Met	Val	Pro	Val	Ala	Gln	Ala	Gly						
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Ser	Ser	Glu	Ala	Ser	Leu	Ala	Ala	Gly	Ala	Phe	Pro	Pro	Pro	Glu	Asp						
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Ala	Ser	Thr	Pro	Phe	Ala	Ile	Pro	Arg	Thr	Ser	Ser	Leu	Ala	Arg	Ala						
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aag	cgg	cca	tcg	gtc	tcc	ttc	gcg	gaa	ggg	acc	aag	ttt	gca	cca	cag	1829					
Lys	Arg	Pro	Ser	Val	Ser	Phe	Ala	Glu	Gly	Thr	Lys	Phe	Ala	Pro	Gln						

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Arg	Leu	Ser	Arg	Gly	Ala	Gln	Ser	Gly	Pro	Glu	Gly	Arg	Glu	Ala	Glu				
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Glu	Ser	Thr	Gly	Pro	Asp	Glu	Ala	Glu	Ala	Pro	Glu	Ser	Phe	Pro	Ala				
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ggt	agc	cgg	aca	gtg	gct	gag	cac	gtg	gaa	gcc	att	gag	ggc	agc	gtc	2069			
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Gln	Glu	Ser	Ser	Gly	Pro	Val	Thr	Thr	Ile	Tyr	Met	Leu	Ala	Gly	Lys				
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Pro	Arg	Gly	Ser	Glu	Gly	Pro	Val	Arg	Ser	Val	Phe	Arg	His	Phe	Gly				
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Ser	Phe	Gln	Lys	Gly	Gln	Ala	Glu	Ala	Lys	Val	Lys	Arg	Ala	Ile	Pro				
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Lys	Pro	Pro	Arg	Gln	Ala	Leu	Asn	Arg	Lys	Lys	Gly	Ser	Pro	Gly	Leu				
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Ala	Ser	Gly	Ser	Val	Gly	Gln	Ser	Pro	Asn	Ser	Ala	Pro	Lys	Ala	Gly				
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Leu	Pro	Gly	Ala	Thr	Gly	Pro	Met	Ala	Val	Arg	Pro	Glu	Glu	Ala	Val				
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Val	Ser	Gly	Cys	Gly	Ser	Pro	Glu	Gln	Asp	Pro	Gln	Lys	Gln	Ala	Glu				
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830

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35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly
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Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu

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Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala		
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Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg		
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Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe		
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Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys		
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Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu		
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Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro		
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		240
Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser		
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		255
His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu		
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Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp		
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Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu		
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Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu		
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Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro		
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Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly		

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Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys		
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Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser		
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Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro		
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Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser		
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Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr		
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Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val		
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Ser Gly Glu Ala Asp Glu Val Pro Ala Tyr Cys Val Pro Pro Gln Glu		
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Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala		
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Leu Ser Ser Pro Leu Arg Lys Pro Lys Arg Leu Ser Arg Gly Ala Gln		
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Ser Gly Pro Glu Gly Arg Glu Ala Glu Glu Ser Thr Gly Pro Asp Glu		
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Ala Glu Ala Pro Glu Ser Phe Pro Ala Ala Ala Ser Pro Gly Asp Ser		
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Ala Thr Gly His Arg Arg Pro Pro Leu Gly Ser Arg Thr Val Ala Glu		
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His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val		
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Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro		
	690	700
Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala		
705	710	715
Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu		
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Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln		
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Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro		
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Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr		
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Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro		
785	790	795
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825

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 Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys
 20 25 30

aat tct gtt ggg gcg tct gtc gca act gta gtc acc gct gat aat cct 144
 Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro
 35 40 45

cga cgt tca gtg tct ttc cct att tat tgt gca agc tta gca tat gca 192
 Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala
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agc agt aaa tac aac aat atc tcg tca gaa aca gtc gga atc gcc cat 240
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ctg gaa cat aga caa tcc ctt gcg aaa gac ttc acg tgt tcc aat gcg 288
 Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala
 85 90 95

agc caa gaa aca ttt gga caa aga agt ttt gtt att ctt gct gaa aac 336
 Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn
 100 105 110

aca aaa gac act gat gtg atg aaa agt tcc gtg gat aac gtt ttc aga 384
 Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg
 115 120 125

aac aag aat agt atc ttc tac cag ctt agt cct ttt gtc aac tct gct 432
 Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala
 130 135 140

cct cca cag cga tat gca aac ttt ttc gct gtt ctg aat aaa tgt tcc 480
 Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser
 145 150 155 160

gaa act gca caa acg gag caa agc tct gac tat gga acg ttt tta aca 528
 Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr
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 Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro
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 Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly
 195 200 205

gcg aac gcc tat tct gac att ctg ctt gtg att aat tat aac gtg tct 672

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Thr	Ile	Thr	Asp	Asn	Asp	Ala	Thr	Glu	Ile	Lys	Ser	Ala	Leu	Glu	Lys		
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Gln	Arg	Ser	Arg	Leu	Tyr	Ile	Leu	Phe	Val	Gln	Thr	Tyr	Phe	Asn	Tyr		
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Thr	Asp	Thr	Tyr	Tyr	Ala	Met	Asn	Lys	Leu	Ala	Ile	Ala	Ser	Gly	Gly		
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Tyr	Ala	Asn	Thr	Lys	Asn	Tyr	Ala	Trp	Ala	Cys	Ser	Ile	Ser	Glu	Ile		
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Tyr	Thr	Ser	Asn	Ser	Asn	Val	Thr	Ile	Asp	Pro	Asp	Phe	Leu	Ile	Arg		
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Ile	Ser	Ile	Pro	Ala	Asp	Ser	Thr	Phe	Asp	Asn	Ala	Lys	Pro	Asn	Leu	
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	770					775					780					
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Pro	Thr	Lys	Pro	Ile	Asn	Leu	Ile	Val	Asn	Asn	Asn	Gly	Thr	Thr	Gly	
785					790					795					800	
tac	tac	gca	atc	gaa	gtc	atc	gga	tat	cta	aag	aca	tca	tat	ggt	ttc	2448
Tyr	Tyr	Ala	Ile	Glu	Val	Ile	Gly	Tyr	Leu	Lys	Thr	Ser	Tyr	Gly	Phe	
				805					810					815		
aat	att	gat	aat	gct	aac	gga	tca	aat	gaa	aac	ctg	aac	tcg	gga	gta	2496
Asn	Ile	Asp	Asn	Ala	Asn	Gly	Ser	Asn	Glu	Asn	Leu	Asn	Ser	Gly	Val	
			820					825					830			
gta	tat	aac	caa	caa	aac	aca	ttg	aat	atc	tat	tct	gcg	ccg	ttt	tca	2544
Val	Tyr	Asn	Gln	Gln	Asn	Thr	Leu	Asn	Ile	Tyr	Ser	Ala	Pro	Phe	Ser	
		835					840					845				
cag	ctt	cct	aaa	act	gat	cca	tca	aac	ttc	cca	tat	ctc	aca	ctt	gga	2592
Gln	Leu	Pro	Lys	Thr	Asp	Pro	Ser	Asn	Phe	Pro	Tyr	Leu	Thr	Leu	Gly	
	850					855					860					
gaa	att	gcc	agt	aac	gga	aca	gtt	tta	cct	gca	aca	aca	ggt	ttg	ttt	2640
Glu	Ile	Ala	Ser	Asn	Gly	Thr	Val	Leu	Pro	Ala	Thr	Thr	Val	Leu	Phe	
865					870					875					880	
aca	aga	aaa	agt	ggt	gcg	tcc	tgt	ttt	tac	agt	cac	ttc	acc	ggt	ctt	2688
Thr	Arg	Lys	Ser	Gly	Ala	Ser	Cys	Phe	Tyr	Ser	His	Phe	Thr	Val	Leu	
				885					890					895		
gat	gtc	tcg	tcc	caa	agc	aca	aca	att	gga	tat	cag	gca	cag	ttg	acc	2736
Asp	Val	Cys	Ser	Gln	Ser	Thr	Thr	Ile	Gly	Tyr	Gln	Ala	Gln	Leu	Thr	
			900					905					910			
aca	aga	aca	agc	acc	ttg	aca	aat	agg	att	caa	caa	ttt	gtg	ctg	aca	2784
Thr	Arg	Thr	Ser	Thr	Leu	Thr	Asn	Arg	Ile	Gln	Gln	Phe	Val	Leu	Thr	
		915					920					925				
tcg	ttt	aaa	aca	agt	tat	gca	aat	aat	gat	act	tcc	tcg	cat	gga	cat	2832

Cys	Phe	Lys	Thr	Ser	Tyr	Ala	Asn	Asn	Asp	Thr	Ser	Cys	His	Gly	His		
930						935					940						
gga	tca	cca	atg	gca	acc	tgt	gcc	tgt	aat	gct	gac	ttc	gga	gga	att	2880	
Gly	Ser	Pro	Met	Ala	Thr	Cys	Ala	Cys	Asn	Ala	Asp	Phe	Gly	Gly	Ile		
945					950				955						960		
gat	tgc	act	gaa	ccg	gct	tgt	gta	aat	gga	ggt	gtt	cgg	gat	ggg	tcg	2928	
Asp	Cys	Thr	Glu	Pro	Ala	Cys	Val	Asn	Gly	Gly	Val	Arg	Asp	Gly	Ser		
				965					970						975		
gtt	tgt	cgt	tgt	cct	gta	aga	ttc	tat	ggg	ctt	cga	tgt	gaa	gaa	tgt	2976	
Val	Cys	Arg	Cys	Pro	Val	Arg	Phe	Tyr	Gly	Leu	Arg	Cys	Glu	Glu	Cys		
			980					985							990		
gag	tct	agg	caa	aat	ctg	cct	ata	aga	aaa	tta	tcc	aca	cct	aat	tac	3024	
Glu	Ser	Arg	Gln	Asn	Leu	Pro	Ile	Arg	Lys	Leu	Ser	Thr	Pro	Asn	Tyr		
		995					1000					1005					
gga	caa	att	act	gac	aaa	tta	ctg	gta	aag	aaa	ttc	att	cag	ttc		3069	
Gly	Gln	Ile	Thr	Asp	Lys	Leu	Leu	Val	Lys	Lys	Phe	Ile	Gln	Phe			
	1010					1015					1020						
cct	ttt	gaa	tca	gaa	cca	gct	tcg	tct	act	gtc	tcc	gtg	ata	act		3114	
Pro	Phe	Glu	Ser	Glu	Pro	Ala	Ser	Ser	Thr	Val	Ser	Val	Ile	Thr			
	1025					1030					1035						
tca	act	act	atg	ctg	cct	tct	acg	tca	act	gtt	gct	cca	agc	aca		3159	
Ser	Thr	Thr	Met	Leu	Pro	Ser	Thr	Ser	Thr	Val	Ala	Pro	Ser	Thr			
	1040					1045					1050						
agc	caa	tca	aca	ata	gtt	tcc	act	gtt	act	aca	cag	tca	cca	agt		3204	
Ser	Gln	Ser	Thr	Ile	Val	Ser	Thr	Val	Thr	Thr	Gln	Ser	Pro	Ser			
	1055					1060					1065						
cct	tca	aca	aca	gct	cca	aaa	caa	gtc	cga	gct	gct	gca	ttc	att		3249	
Pro	Ser	Thr	Thr	Ala	Pro	Lys	Gln	Val	Arg	Ala	Ala	Ala	Phe	Ile			
	1070					1075					1080						
att	gac	tgc	atg	gga	act	gat	gat	tat	gct	ttc	aat	cag	aca	ttc		3294	
Ile	Asp	Cys	Met	Gly	Thr	Asp	Asp	Tyr	Ala	Phe	Asn	Gln	Thr	Phe			
	1085					1090					1095						
aaa	tcg	att	gca	cag	tac	ttc	aag	aca	ttt	ggc	tat	agc	cat	tac		3339	
Lys	Ser	Ile	Ala	Gln	Tyr	Phe	Lys	Thr	Phe	Gly	Tyr	Ser	His	Tyr			
	1100					1105					1110						
atc	atg	tta	acc	aat	aat	ttg	aat	gga	agt	tta	caa	ttg	aac	aat		3384	
Ile	Met	Leu	Thr	Asn	Asn	Leu	Asn	Gly	Ser	Leu	Gln	Leu	Asn	Asn			
	1115					1120					1125						
gga	agt	tta	cta	ttt	gaa	gat	ttc	caa	caa	tat	tca	gat	gag	agt		3429	
Gly	Ser	Leu	Leu	Phe	Glu	Asp	Phe	Gln	Gln	Tyr	Ser	Asp	Glu	Ser			
	1130					1135					1140						
atg	att	atg	agc	aaa	cta	ccc	ctg	tat	tgg	agt	tta	aga	gcc	acc		3474	
Met	Ile	Met	Ser	Lys	Leu	Pro	Leu	Tyr	Trp	Ser	Leu	Arg	Ala	Thr			
	1145					1150					1155						
cca	agt	aga	acc	gct	agc	gtc	agc	aac	gcg	ctc	agt	aag	att	ctt		3519	

Pro	Ser	Arg	Thr	Ala	Ser	Val	Ser	Asn	Ala	Leu	Ser	Lys	Ile	Leu	
	1160					1165					1170				
gca	agt	tac	aat	aga	aac	ggt	aca	gag	ttc	aaa	aac	tct	gta	agc	3564
Ala	Ser	Tyr	Asn	Arg	Asn	Gly	Thr	Glu	Phe	Lys	Asn	Ser	Val	Ser	
	1175					1180					1185				
atg	aat	att	ttt	tat	gca	act	caa	ata	ggg	ctg	ggc	gat	gag	gat	3609
Met	Asn	Ile	Phe	Tyr	Ala	Thr	Gln	Ile	Gly	Leu	Gly	Asp	Glu	Asp	
	1190					1195					1200				
cca	act	gca	gca	ggc	tta	gaa	gtt	ttc	aac	aag	agc	gcg	att	gta	3654
Pro	Thr	Ala	Ala	Gly	Leu	Glu	Val	Phe	Asn	Lys	Ser	Ala	Ile	Val	
	1205					1210					1215				
tat	tct	gca	ttc	gca	aaa	aat	gcc	aac	cag	aca	att	gtg	act	tct	3699
Tyr	Ser	Ala	Phe	Ala	Lys	Asn	Ala	Asn	Gln	Thr	Ile	Val	Thr	Ser	
	1220					1225					1230				
ctt	caa	aaa	ttc	agt	acc	gac	gta	acc	act	gct	aga	gat	tat	tac	3744
Leu	Gln	Lys	Phe	Ser	Thr	Asp	Val	Thr	Thr	Ala	Arg	Asp	Tyr	Tyr	
	1235					1240					1245				
agt	ggt	ctt	tct	gat	atg	tat	gaa	agc	act	caa	ccc	cag	ggt	tcg	3789
Ser	Gly	Leu	Ser	Asp	Met	Tyr	Glu	Ser	Thr	Gln	Pro	Gln	Gly	Ser	
	1250					1255					1260				
aat	gag	ctc	cct	cca	aaa	ccg	gat	caa	ctt	agt	tgt	gtg	tac	ggc	3834
Asn	Glu	Leu	Pro	Pro	Lys	Pro	Asp	Gln	Leu	Ser	Cys	Val	Tyr	Gly	
	1265					1270					1275				
ctg	caa	tcg	aat	atc	aaa	att	gca	att	gat	aga	tcc	aac	tcg	tca	3879
Leu	Gln	Ser	Asn	Ile	Lys	Ile	Ala	Ile	Asp	Arg	Ser	Asn	Ser	Ser	
	1280					1285					1290				
aac	cca	gag	gtt	aac	aca	att	atg	aat	aat	ttc	ctt	gtc	aat	ttc	3924
Asn	Pro	Glu	Val	Asn	Thr	Ile	Met	Asn	Asn	Phe	Leu	Val	Asn	Phe	
	1295					1300					1305				
cgt	ctt	gga	ttt	aat	tat	att	gaa	aat	gat	gac	aac	aga	tgc	ggg	3969
Arg	Leu	Gly	Phe	Asn	Tyr	Ile	Glu	Asn	Asp	Asp	Asn	Arg	Cys	Gly	
	1310					1315					1320				
gat	aag	tta	cca	gaa	ttt	tat	acc	gga	cga	act	gca	tta	acg	gcg	4014
Asp	Lys	Leu	Pro	Glu	Phe	Tyr	Thr	Gly	Arg	Thr	Ala	Leu	Thr	Ala	
	1325					1330					1335				
ttc	ccg	tat	tat	gat	gcc	att	gca	aaa	ata	gca	aca	ttt	tgt	cca	4059
Phe	Pro	Tyr	Tyr	Asp	Ala	Ile	Ala	Lys	Ile	Ala	Thr	Phe	Cys	Pro	
	1340					1345					1350				
tct	caa	tac	act	tcg	atg	cta	tca	ttc	caa	gtc	gtc	gga	agc	caa	4104
Ser	Gln	Tyr	Thr	Ser	Met	Leu	Ser	Phe	Gln	Val	Val	Gly	Ser	Gln	
	1355					1360					1365				
tta	cag	cca	aac	ttc	acc	gat	aaa	tat	gtc	aaa	gtc	att	agc	aag	4149
Leu	Gln	Pro	Asn	Phe	Thr	Asp	Lys	Tyr	Val	Lys	Val	Ile	Ser	Lys	
	1370					1375					1380				
aac	att	aac	agt	gcc	gat	tgt	tcg	tgc	aac	aga	ttc	aac	gac	act	4194

Asn Ile	Asn Ser Ala Asp Cys	Ser Cys Asn Arg Phe	Asn Asp Thr	
1385	1390	1395		
aac act	gcg aag ttt atc att	tgg atg cct cgt tct	gca gcg ccc	4239
Asn Thr	Ala Lys Phe Ile Ile	Trp Met Pro Arg Ser	Ala Ala Pro	
1400	1405	1410		
gtc act	gat gat gat tat tta	acc ttg ctc aaa ctc	aac acc aca	4284
Val Thr	Asp Asp Asp Tyr Leu	Thr Leu Leu Lys Leu	Asn Thr Thr	
1415	1420	1425		
aat gca	tat cac ttt gtc gtt	cca ttt tac gat agt	gct gat aac	4329
Asn Ala	Tyr His Phe Val Val	Pro Phe Tyr Asp Ser	Ala Asp Asn	
1430	1435	1440		
agt acc	gat ttg tac tac cag	att ctt gtg aag caa	gca gga ccc	4374
Ser Thr	Asp Leu Tyr Tyr Gln	Ile Leu Val Lys Gln	Ala Gly Pro	
1445	1450	1455		
gaa ggt	ccc gat tat tat tgg	tta cca aat gca gtt	aat gct aca	4419
Glu Gly	Pro Asp Tyr Tyr Trp	Leu Pro Asn Ala Val	Asn Ala Thr	
1460	1465	1470		
aat ttg	caa acg aat gta ata	aat att cta tac gag	aag ctt tgc	4464
Asn Leu	Gln Thr Asn Val Ile	Asn Ile Leu Tyr Glu	Lys Leu Cys	
1475	1480	1485		
caa act	gcc ggt gtt gac cca	aca gca atc cca cca	taa	4503
Gln Thr	Ala Gly Val Asp Pro	Thr Ala Ile Pro Pro		
1490	1495	1500		

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136

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Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys
20 25 30

Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro
35 40 45

Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala
50 55 60

Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His
65 70 75 80

Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala
85 90 95

Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn

100					105					110					
Thr	Lys	Asp	Thr	Asp	Val	Met	Lys	Ser	Ser	Val	Asp	Asn	Val	Phe	Arg
	115						120					125			
Asn	Lys	Asn	Ser	Ile	Phe	Tyr	Gln	Leu	Ser	Pro	Phe	Val	Asn	Ser	Ala
	130					135					140				
Pro	Pro	Gln	Arg	Tyr	Ala	Asn	Phe	Phe	Ala	Val	Leu	Asn	Lys	Cys	Ser
145					150					155					160
Glu	Thr	Ala	Gln	Thr	Glu	Gln	Ser	Ser	Asp	Tyr	Gly	Thr	Phe	Leu	Thr
				165					170					175	
Lys	Val	Met	Asn	Val	Thr	Ser	Lys	Ser	Gln	Gln	Arg	Pro	Asn	Asp	Pro
			180						185				190		
Ser	Asp	Pro	Val	Lys	Val	Thr	Asn	Phe	Leu	Pro	Gln	Ala	Ile	Ala	Gly
	195						200					205			
Ala	Asn	Ala	Tyr	Ser	Asp	Ile	Leu	Leu	Val	Ile	Asn	Tyr	Asn	Val	Ser
	210					215					220				
Thr	Ile	Thr	Asp	Asn	Asp	Ala	Thr	Glu	Ile	Lys	Ser	Ala	Leu	Glu	Lys
225					230					235					240
Gln	Arg	Ser	Arg	Leu	Tyr	Ile	Leu	Phe	Val	Gln	Thr	Tyr	Phe	Asn	Tyr
				245					250					255	
Thr	Asp	Thr	Tyr	Tyr	Ala	Met	Asn	Lys	Leu	Ala	Ile	Ala	Ser	Gly	Gly
			260					265					270		
Val	Ala	Ile	Arg	Val	Asn	Thr	Tyr	Asp	Asp	Leu	Ser	Thr	Phe	Phe	Ala
		275					280					285			
Gln	Tyr	Phe	Pro	Leu	Leu	Val	Ala	Asn	Asp	Ile	Val	Ala	Lys	Ala	Tyr
	290					295					300				
Ala	Glu	Asn	Pro	Arg	Pro	Gly	Val	Ala	Leu	Asn	Asn	Val	Asn	Leu	Leu
305					310					315					320
Ala	Gln	Gln	Tyr	Val	Leu	Leu	Val	Thr	Asn	Glu	Asp	Ser	Leu	Gly	Asp
				325					330					335	
Gly	Pro	Val	Pro	Ala	Ser	Val	Thr	Val	Thr	Gly	Ile	Asn	Val	Thr	Gln

340	345	350
Leu Pro Thr Ile Gly Glu Leu Gln Leu Phe Thr Leu Ile Pro Glu Lys		
355	360	365
Ala Gly Lys Phe Thr Pro Leu Phe Tyr Ser Ser Ser Ser Phe Asp Asp		
370	375	380
Gly Ser Lys Ile Thr Ile Thr Tyr Ser Asp Ala Thr Asn Pro Ala Asn		
385	390	400
Pro Ile Tyr Asn Gly Asn Ile Thr Ser Ala Leu Asn Asp Cys Lys Tyr		
	405	410 415
Tyr Ala Asn Thr Lys Asn Tyr Ala Trp Ala Cys Ser Ile Ser Glu Ile		
	420	425 430
Ala Leu Leu Leu Gln Phe Ser Met Arg Asn Ile Gln Ile Asp Arg Val		
	435	440 445
Leu Asn Gly Glu Thr Ile Ser Arg Thr Phe Pro Ile Thr Cys Leu Gly		
	450	455 460
Ala Asp Val Gly Asp Cys Leu Asn Gly Gly Asn Leu Thr Asp Ala Gly		
465	470	475 480
Ser Cys Ile Cys Pro Leu Gln Trp Thr Gly Thr Asn Cys Gln Ala Pro		
	485	490 495
Gln Cys Leu Asn Gly Gly Thr Leu Lys Thr Asp Asp Thr Cys Ala Cys		
	500	505 510
Leu Asp Ser Phe Lys Gly Asp Phe Cys Glu Thr Ser Thr Ser Val Cys		
	515	520 525
Ala Gly Ala Pro Thr Ser Pro Asp Tyr Arg Ser Glu Leu Ser Ser Leu		
	530	535 540
Val Ile Val Ala Asp Val Asn Ala Leu Ser Thr Ser Ser Leu Ser Asn		
545	550	555 560
Thr Val Pro Gly Ile Thr Gly Val Pro Ile Thr Val Ile Leu Tyr Gly		
	565	570 575
Asp Gly Asn Ala Pro Arg Ile Val Gln Ser Thr Thr Asn Ser Glu His		

580	585	590
Leu Ser Glu Val Leu Gly Ala Pro Thr Gly Thr Thr Thr Ser Pro Ser		
595	600	605
Ser Thr Ala Ser Pro Ala Pro Ser Ala Ser Asp Met Tyr Lys Ala Leu		
610	615	620
Asn Leu Ala Leu Asp Asn Gln Leu Thr Asp Arg Ala Phe Val Ile Val		
625	630	635
Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg		
	645	650
Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr		
	660	665
Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro		
	675	680
Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr		
690	695	700
Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln		
705	710	715
Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln		
	725	730
Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu		
	740	745
Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr		
	755	760
Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp		
770	775	780
Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly		
785	790	795
Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe		
	805	810
Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val		

820

825

830

Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser
 835 840 845

Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly
 850 855 860

Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe
 865 870 875 880

Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu
 885 890 895

Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr
 900 905 910

Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr
 915 920 925

Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His
 930 935 940

Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile
 945 950 955 960

Asp Cys Thr Glu Pro Ala Cys Val Asn Gly Gly Val Arg Asp Gly Ser
 965 970 975

Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys
 980 985 990

Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn Tyr
 995 1000 1005

Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe
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Pro Phe Glu Ser Glu Pro Ala Ser Ser Thr Val Ser Val Ile Thr
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Ser Thr Thr Met Leu Pro Ser Thr Ser Thr Val Ala Pro Ser Thr
 1040 1045 1050

Ser Gln Ser Thr Ile Val Ser Thr Val Thr Thr Gln Ser Pro Ser

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Pro Ser Thr Thr Ala Pro Lys Gln Val Arg Ala Ala Ala Phe Ile				
1070		1075		1080
Ile Asp Cys Met Gly Thr Asp Asp Tyr Ala Phe Asn Gln Thr Phe				
1085		1090		1095
Lys Ser Ile Ala Gln Tyr Phe Lys Thr Phe Gly Tyr Ser His Tyr				
1100		1105		1110
Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn				
1115		1120		1125
Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser				
1130		1135		1140
Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr				
1145		1150		1155
Pro Ser Arg Thr Ala Ser Val Ser Asn Ala Leu Ser Lys Ile Leu				
1160		1165		1170
Ala Ser Tyr Asn Arg Asn Gly Thr Glu Phe Lys Asn Ser Val Ser				
1175		1180		1185
Met Asn Ile Phe Tyr Ala Thr Gln Ile Gly Leu Gly Asp Glu Asp				
1190		1195		1200
Pro Thr Ala Ala Gly Leu Glu Val Phe Asn Lys Ser Ala Ile Val				
1205		1210		1215
Tyr Ser Ala Phe Ala Lys Asn Ala Asn Gln Thr Ile Val Thr Ser				
1220		1225		1230
Leu Gln Lys Phe Ser Thr Asp Val Thr Thr Ala Arg Asp Tyr Tyr				
1235		1240		1245
Ser Gly Leu Ser Asp Met Tyr Glu Ser Thr Gln Pro Gln Gly Ser				
1250		1255		1260
Asn Glu Leu Pro Pro Lys Pro Asp Gln Leu Ser Cys Val Tyr Gly				
1265		1270		1275
Leu Gln Ser Asn Ile Lys Ile Ala Ile Asp Arg Ser Asn Ser Ser				

1280		1285		1290
Asn Pro	Glu Val Asn Thr	Ile Met Asn Asn Phe	Leu Val Asn Phe	
1295		1300	1305	
Arg Leu	Gly Phe Asn Tyr	Ile Glu Asn Asp Asp	Asn Arg Cys Gly	
1310		1315	1320	
Asp Lys	Leu Pro Glu Phe	Tyr Thr Gly Arg Thr	Ala Leu Thr Ala	
1325		1330	1335	
Phe Pro	Tyr Tyr Asp Ala	Ile Ala Lys Ile Ala	Thr Phe Cys Pro	
1340		1345	1350	
Ser Gln	Tyr Thr Ser Met	Leu Ser Phe Gln Val	Val Gly Ser Gln	
1355		1360	1365	
Leu Gln	Pro Asn Phe Thr	Asp Lys Tyr Val Lys	Val Ile Ser Lys	
1370		1375	1380	
Asn Ile	Asn Ser Ala Asp	Cys Ser Cys Asn Arg	Phe Asn Asp Thr	
1385		1390	1395	
Asn Thr	Ala Lys Phe Ile	Ile Trp Met Pro Arg	Ser Ala Ala Pro	
1400		1405	1410	
Val Thr	Asp Asp Asp Tyr	Leu Thr Leu Leu Lys	Leu Asn Thr Thr	
1415		1420	1425	
Asn Ala	Tyr His Phe Val	Val Pro Phe Tyr Asp	Ser Ala Asp Asn	
1430		1435	1440	
Ser Thr	Asp Leu Tyr Tyr	Gln Ile Leu Val Lys	Gln Ala Gly Pro	
1445		1450	1455	
Glu Gly	Pro Asp Tyr Tyr	Trp Leu Pro Asn Ala	Val Asn Ala Thr	
1460		1465	1470	
Asn Leu	Gln Thr Asn Val	Ile Asn Ile Leu Tyr	Glu Lys Leu Cys	
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Gln Thr	Ala Gly Val Asp	Pro Thr Ala Ile Pro	Pro Pro	
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Ala Ala Ser His Ile Tyr Gln Asn

1

5

caa ttt gtt caa atg atc ctc aat tca ctt att aac aag tca aaa tct 160

Gln Phe Val Gln Met Ile Leu Asn Ser Leu Ile Asn Lys Ser Lys Ser

10

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Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys	
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Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg
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Ser Val Thr Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp
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Leu Leu Lys Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu
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Glu Gly Gln Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu
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FOR THE PRESIDENT



1

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